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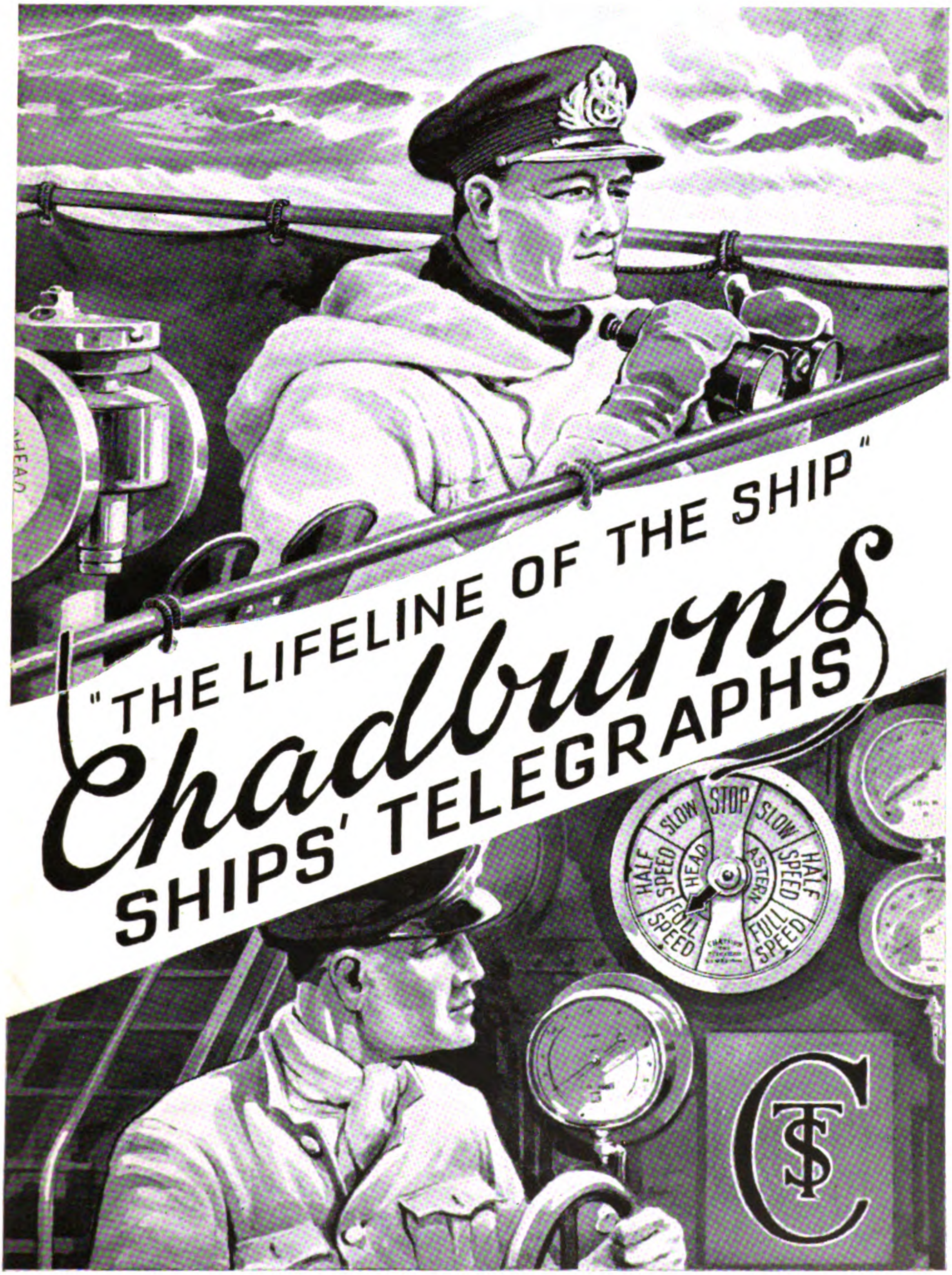
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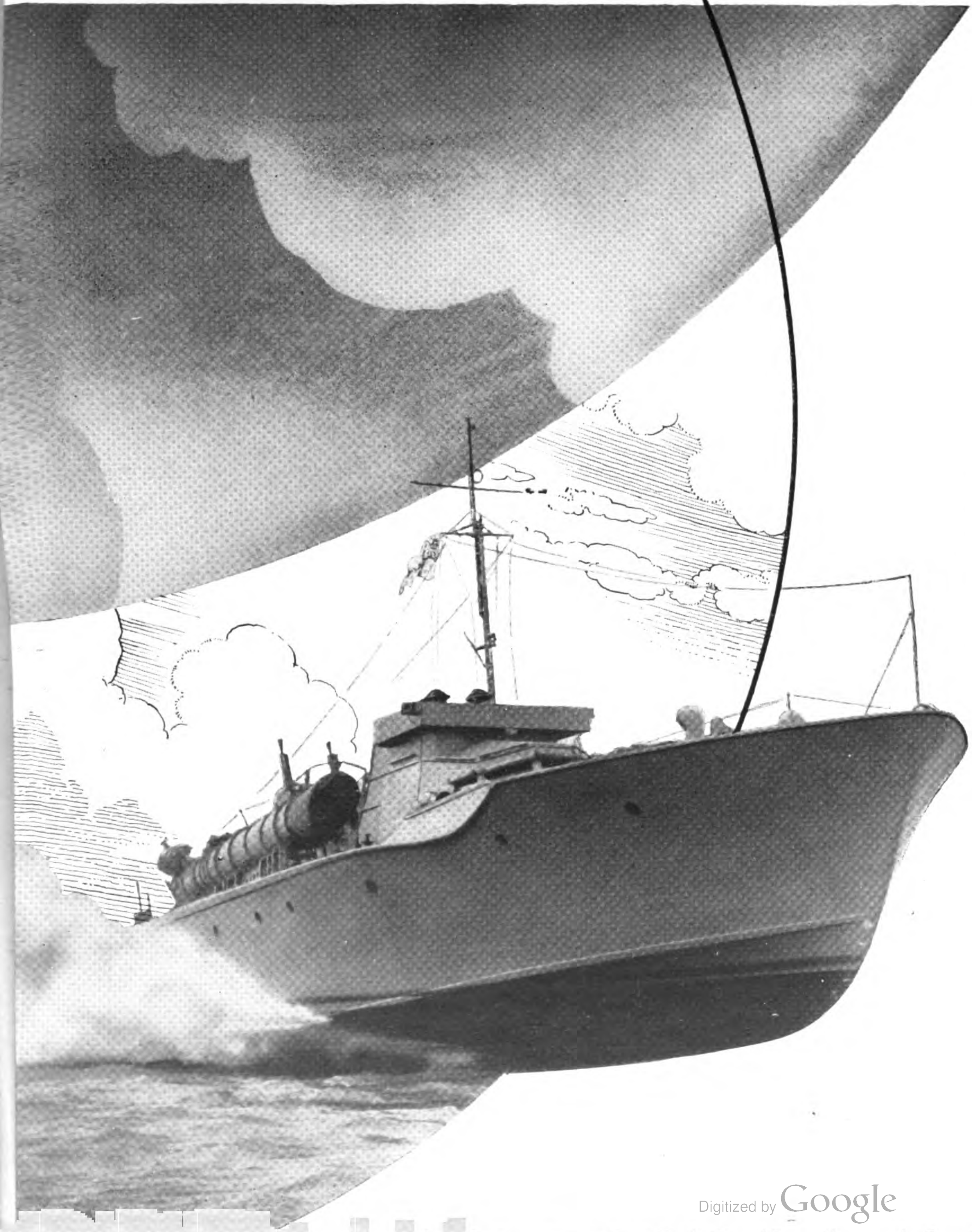

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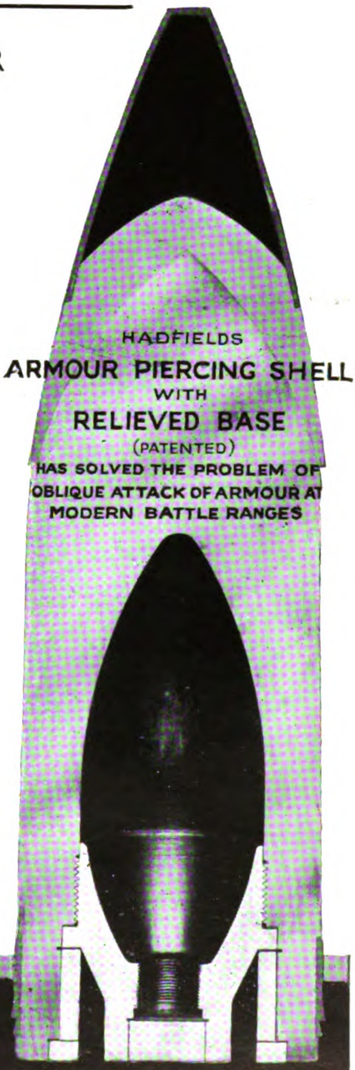

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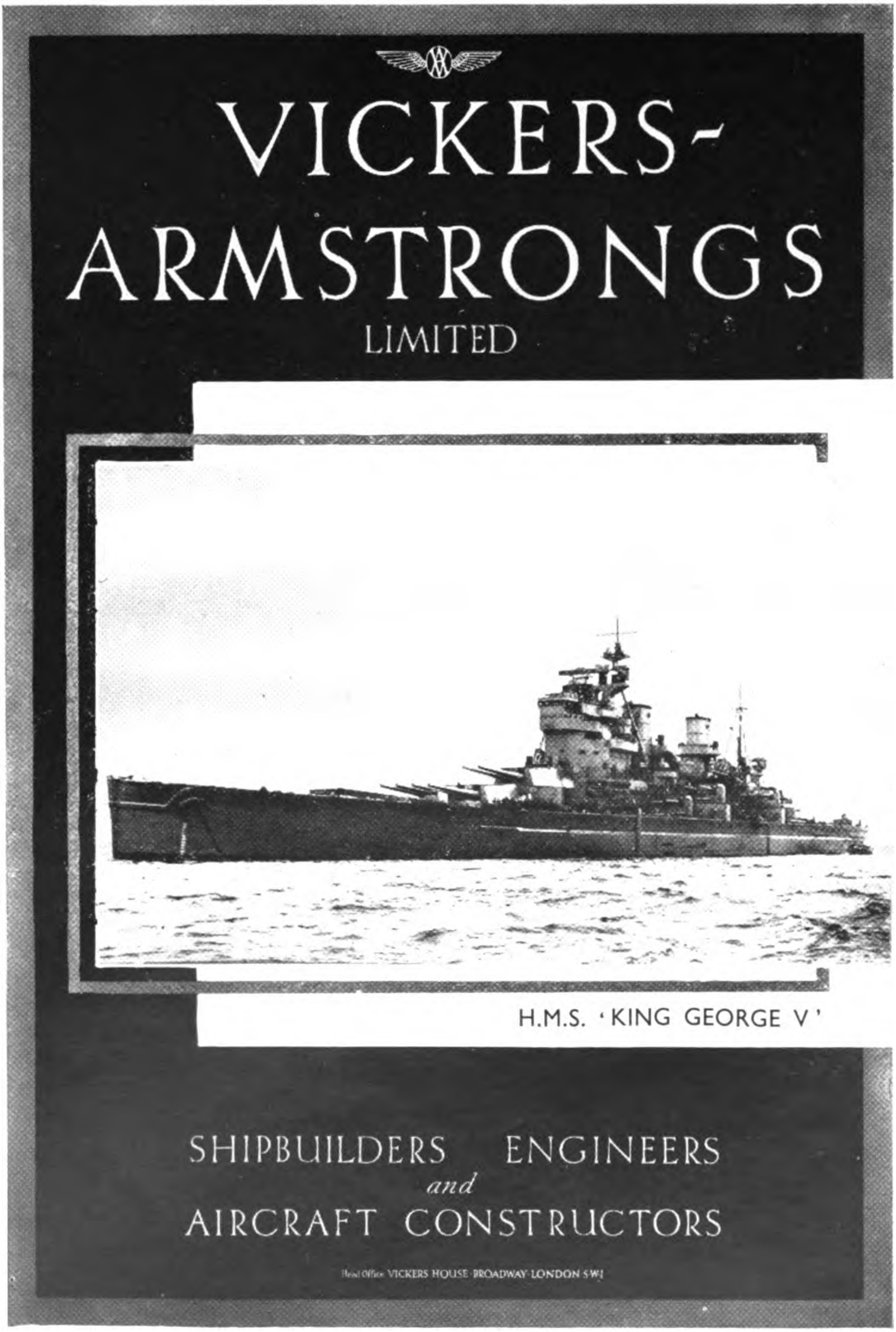

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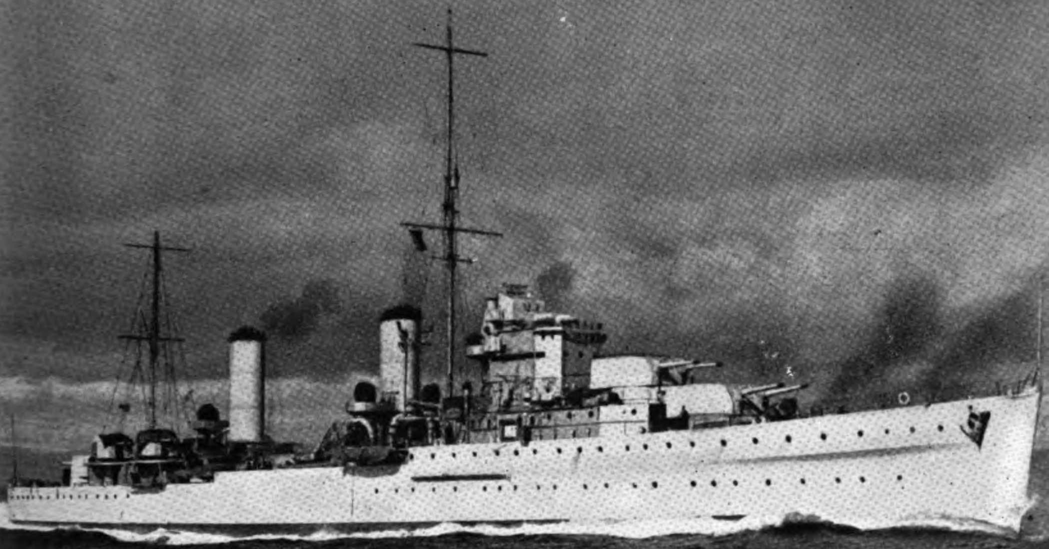

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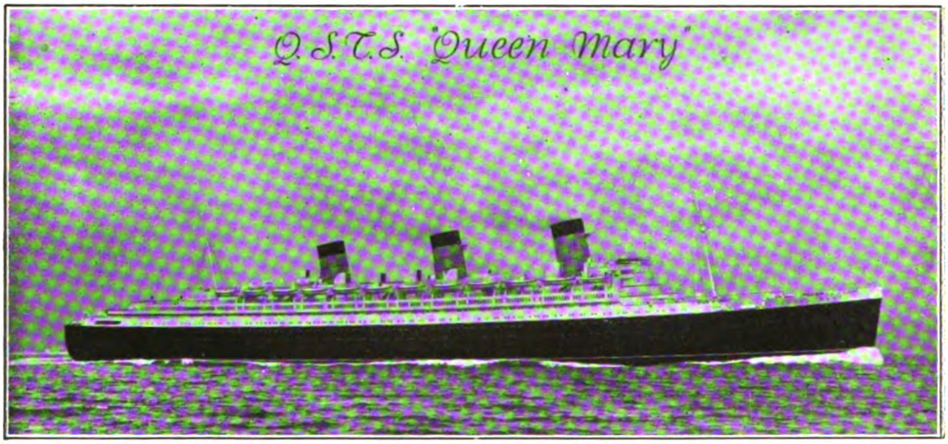

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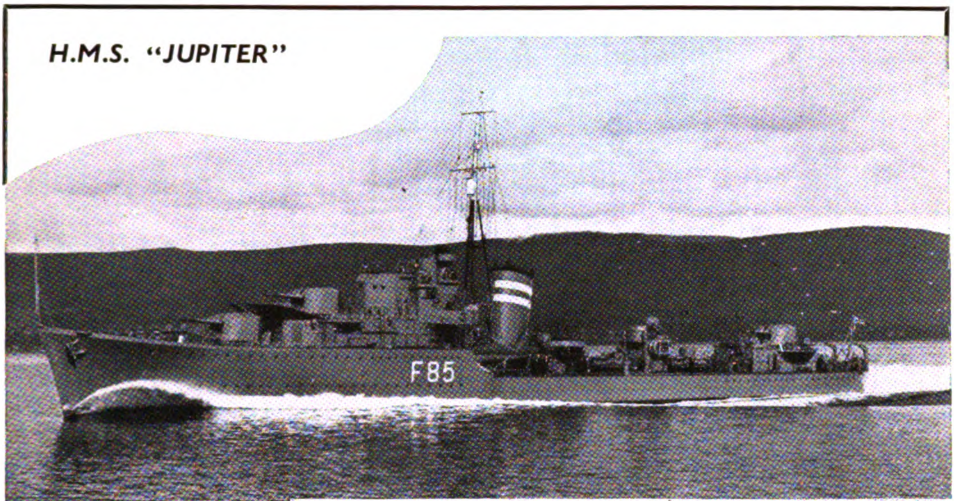

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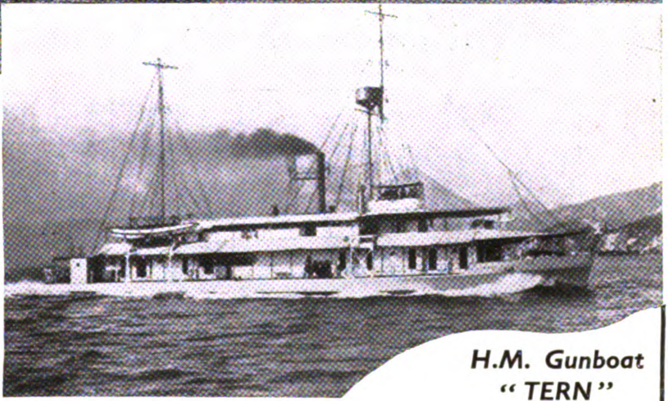

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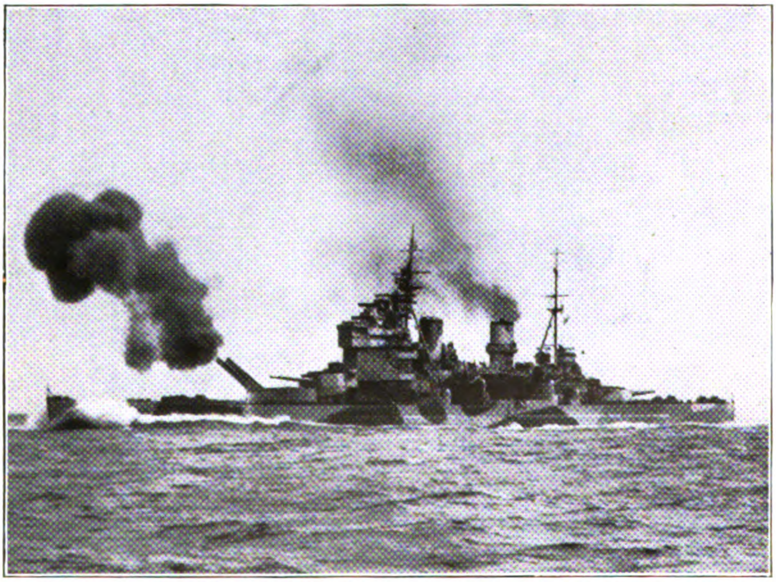

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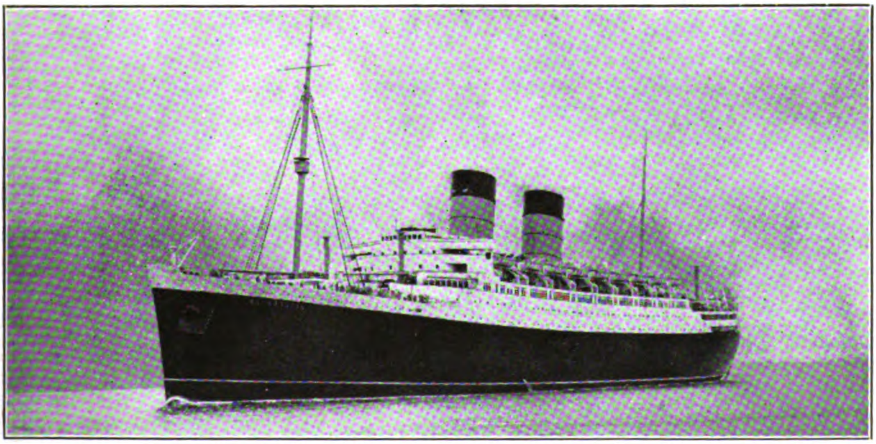

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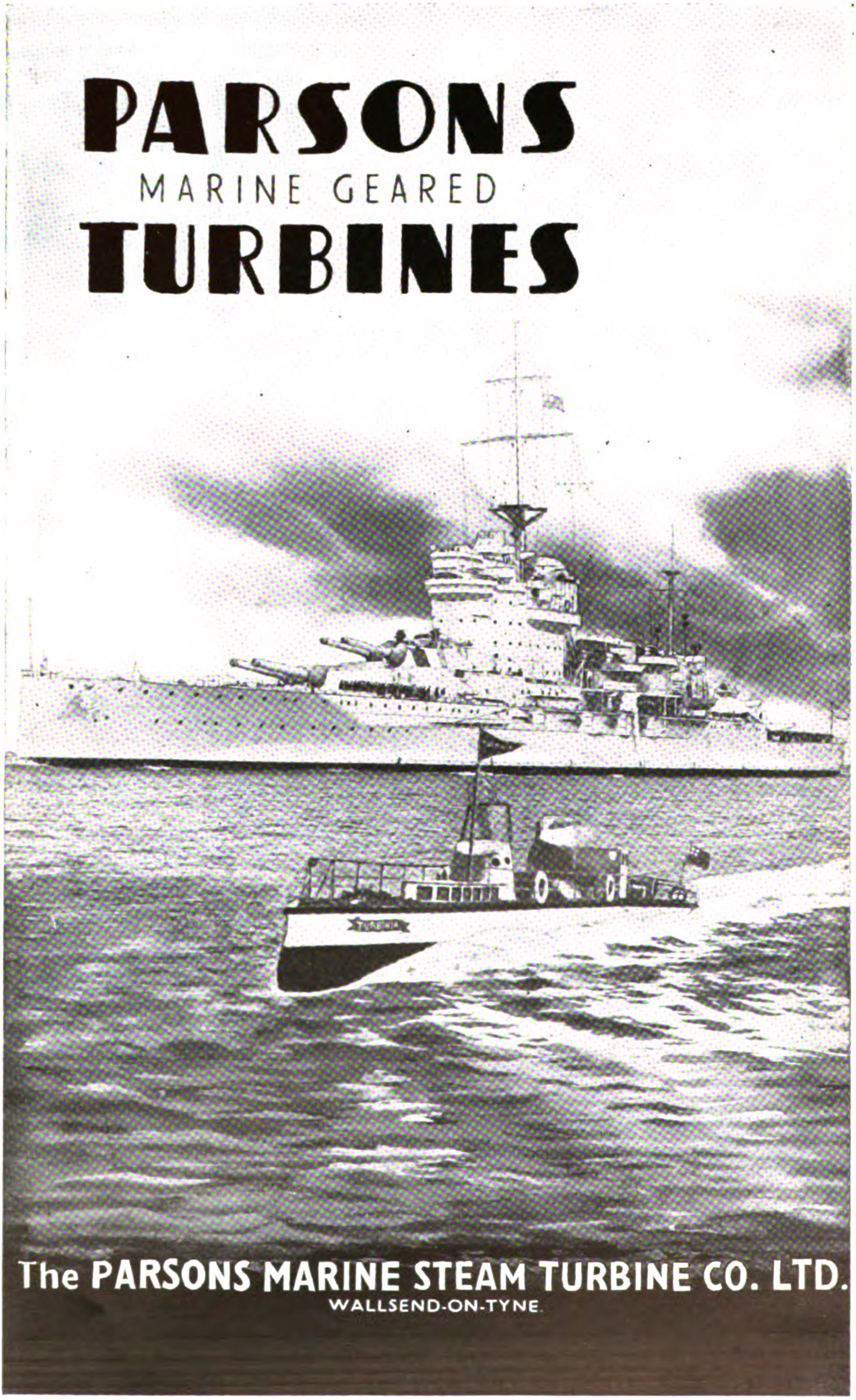

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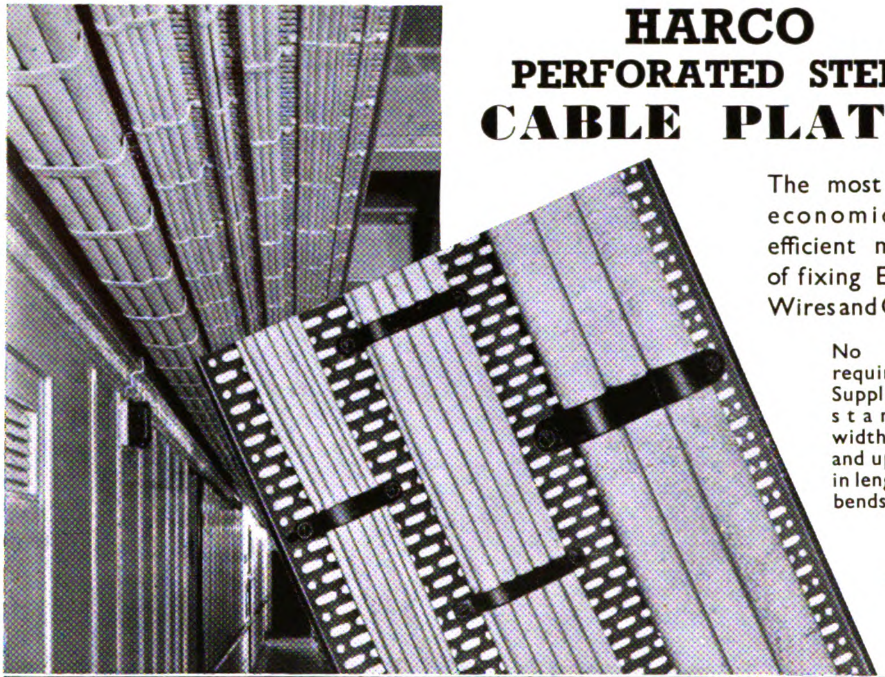

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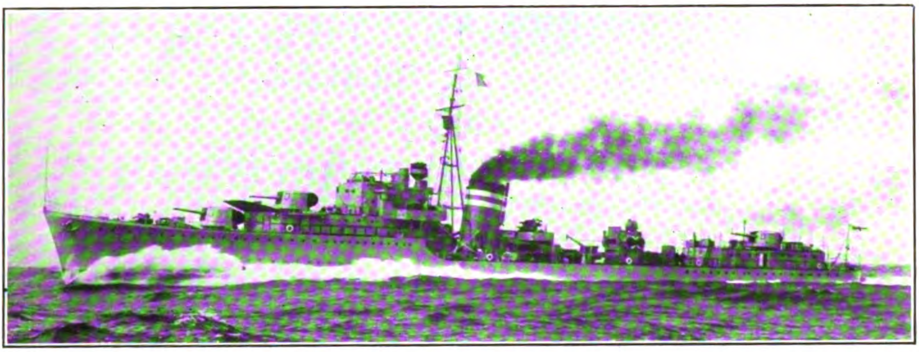

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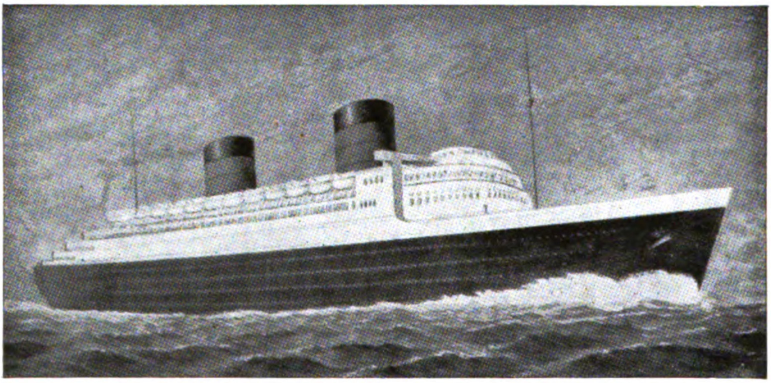

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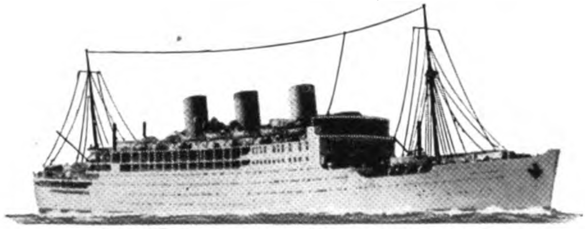

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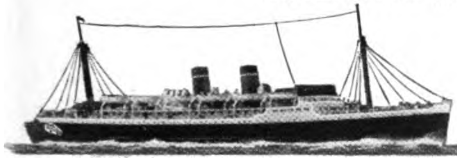

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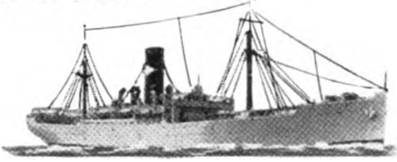

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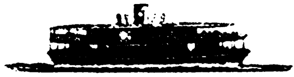

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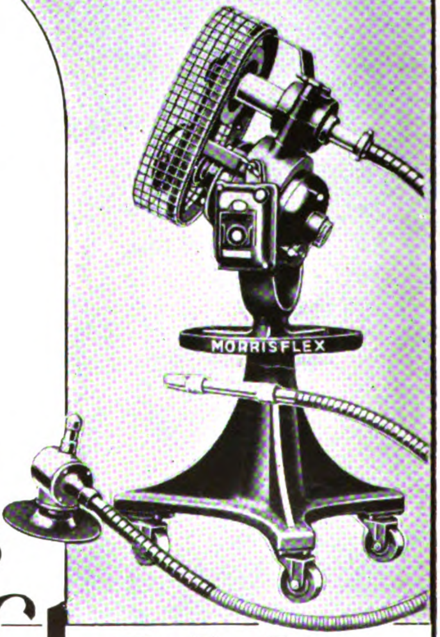

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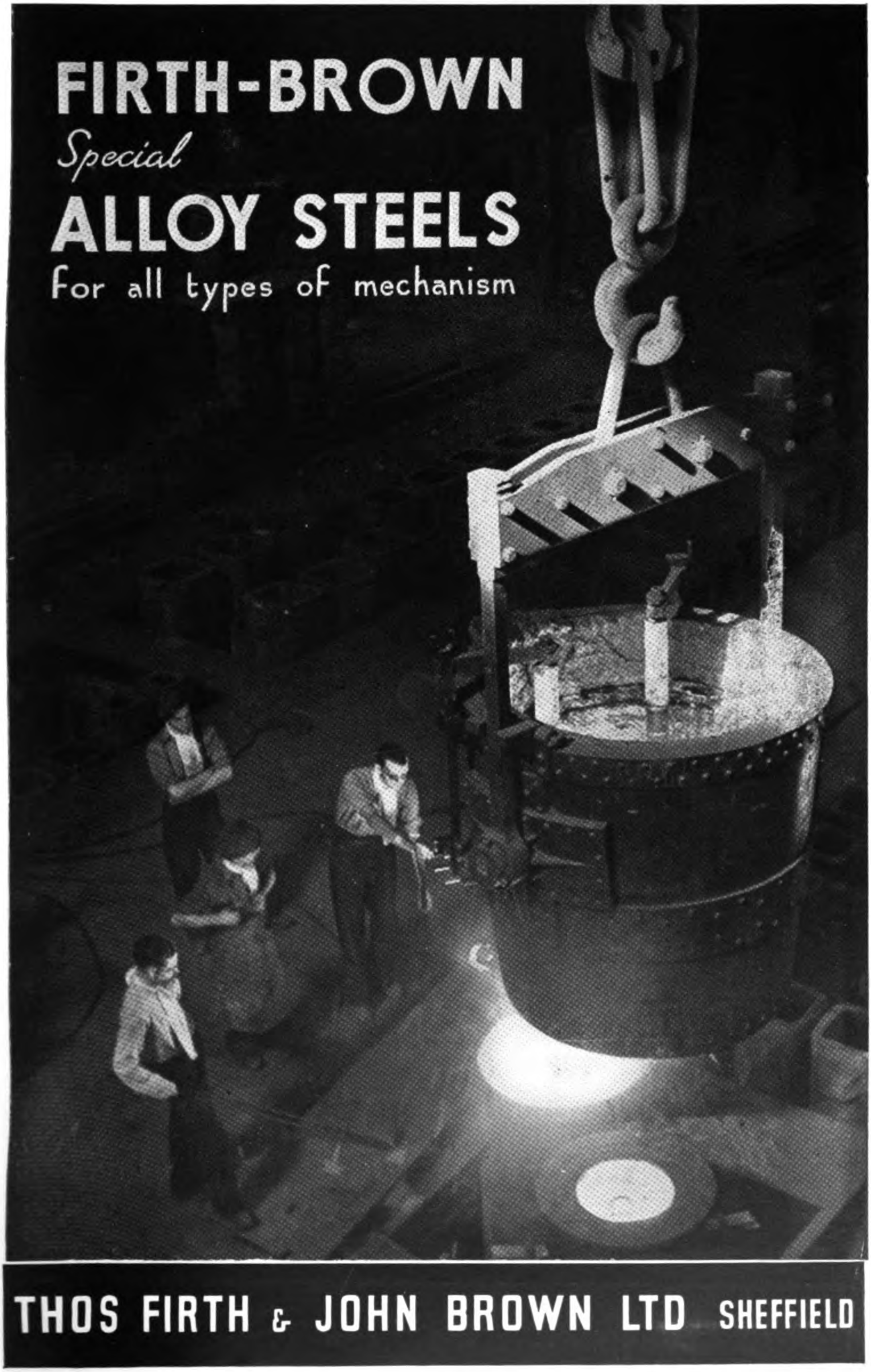
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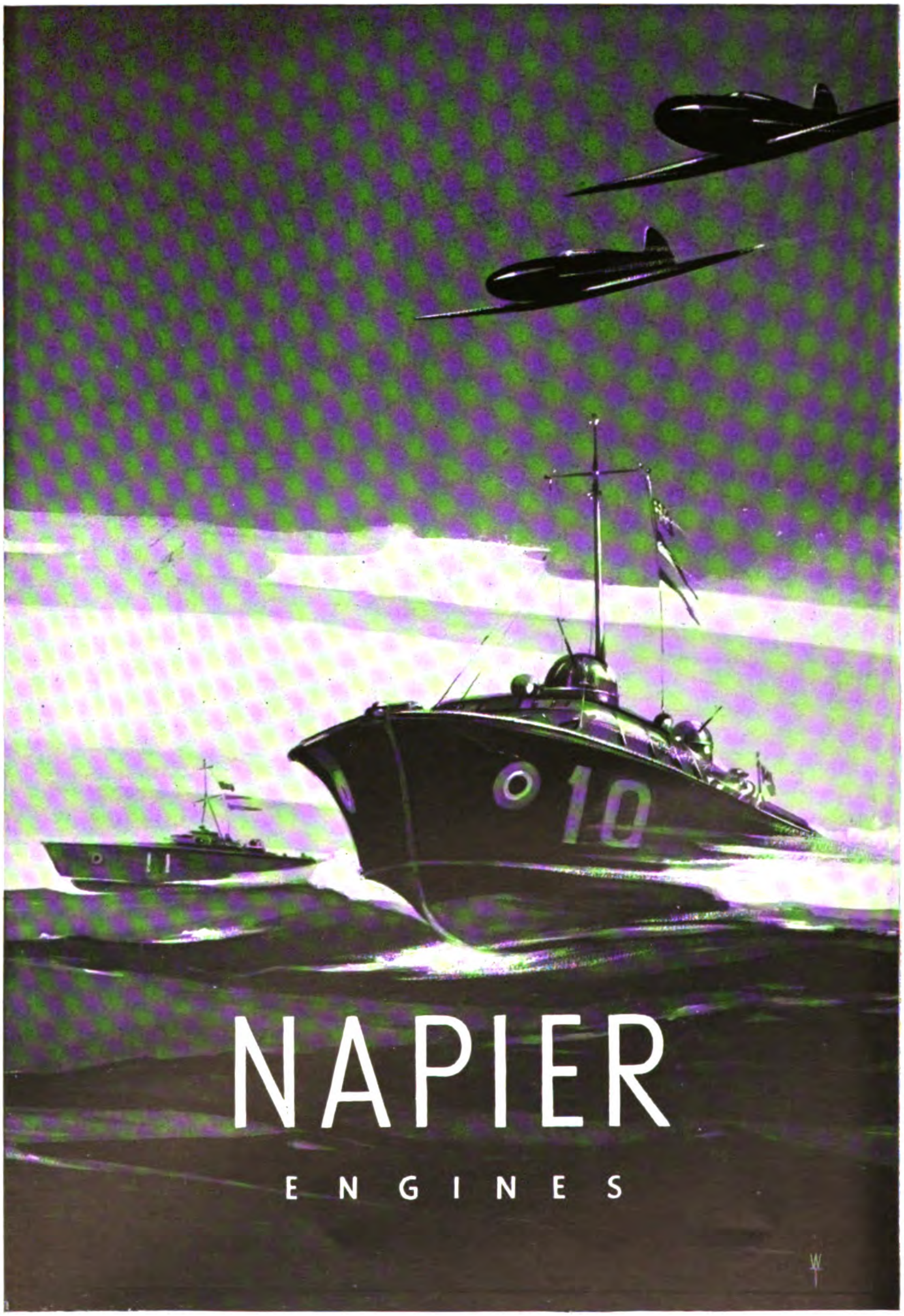
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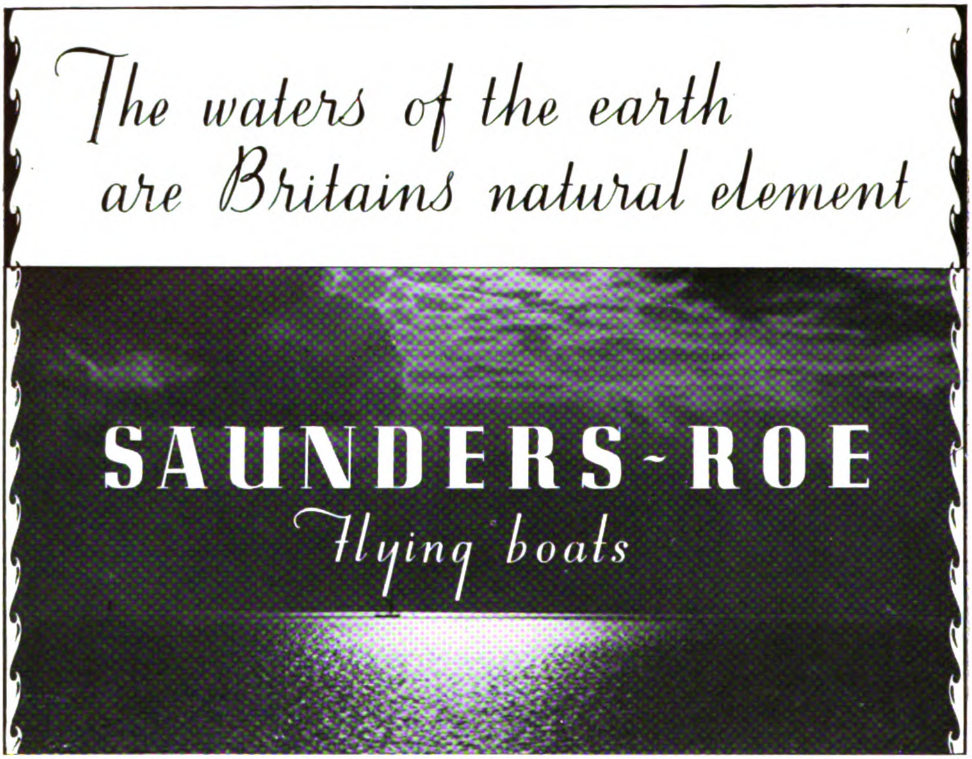

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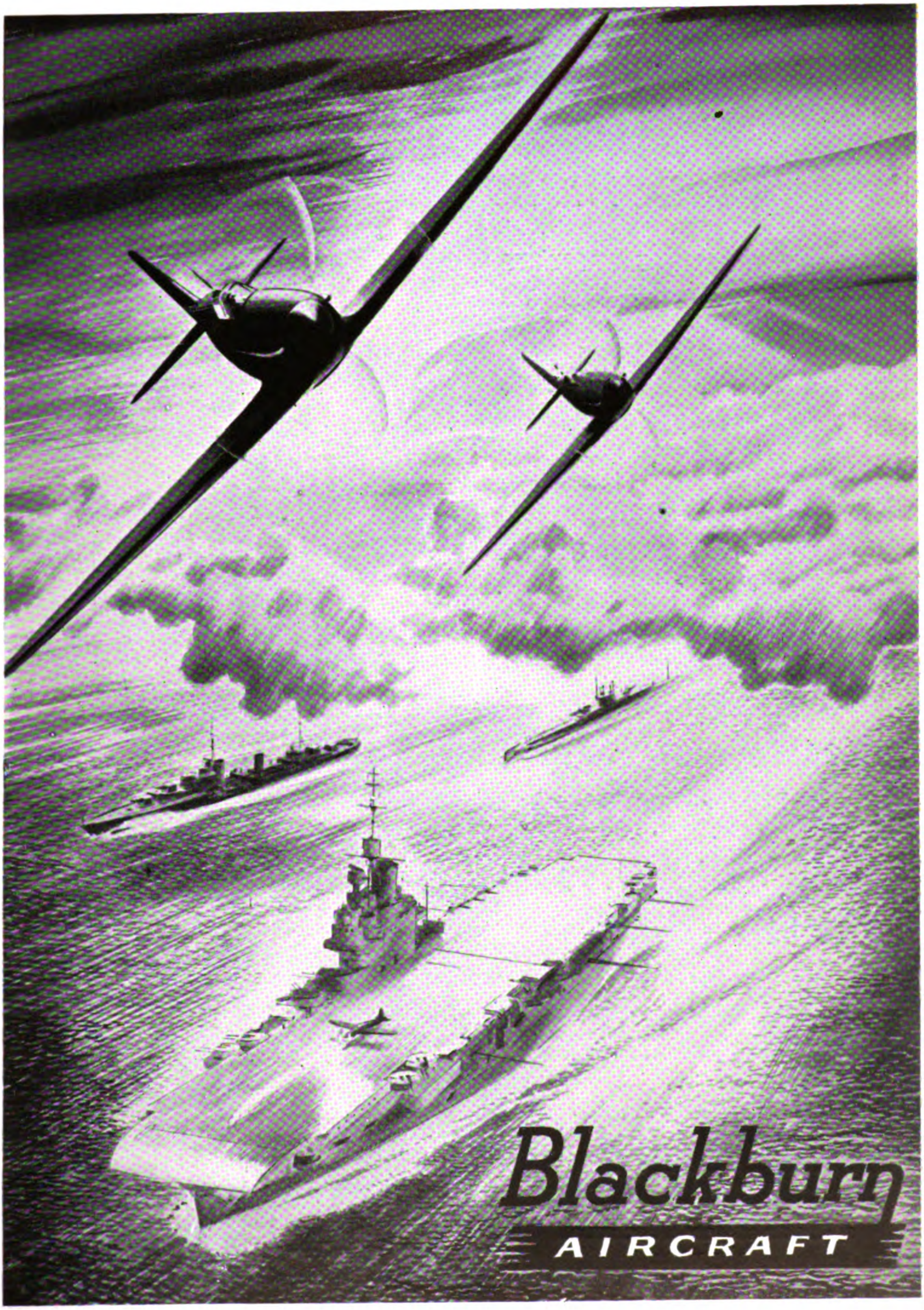
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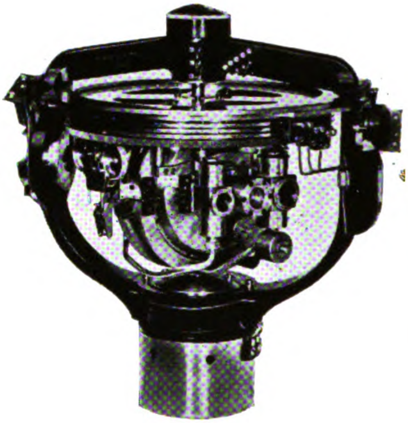

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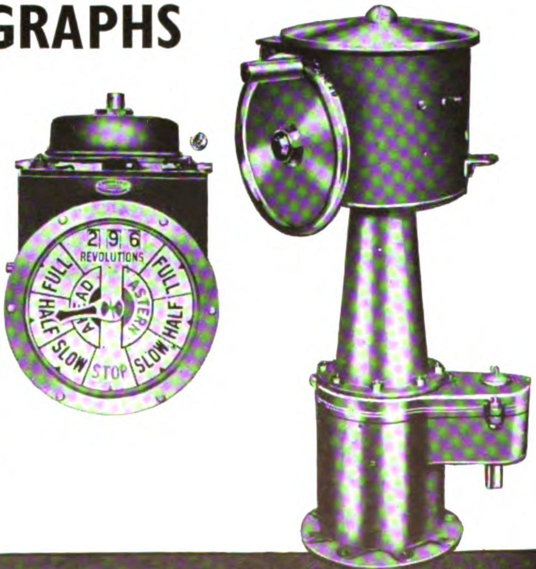

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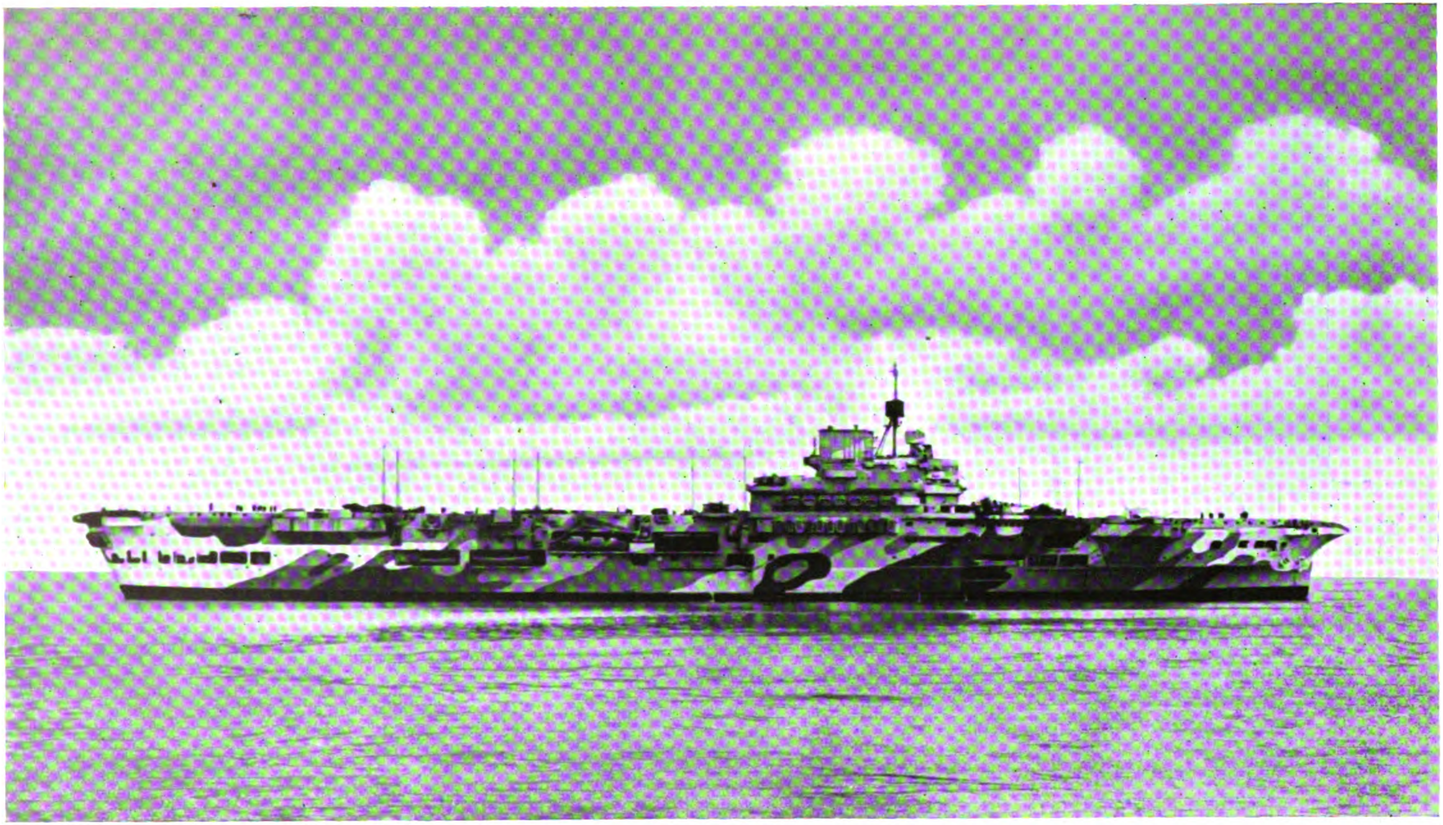

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PREFACE

This volume, as in earlier years, deals with last year—1943—only. The inevitable difficulties of book production in time of war, accentuated by the necessity for strict compliance with the demands of security which are specially operative in the case of a book dealing solely with the armed forces, have again combined to delay its appearance until the middle of the current year. The contents, however, had to be completed early in the New Year and the book has therefore been compiled as on January 1, 1944, to which date only it has been corrected. Events and developments which have occurred since that date are not dealt with in this volume.

There is no important variation in the current issue from the form adopted during the last few years. Again the war at sea as a whole is chronicled, as far as it can be in the light of events that have been made public, in Chapter I; Mr. F. E. McMurtrie reviews the developments—under the same limitations of course—of foreign navies during 1943; Major Oliver Stewart has again contributed a penetrating analysis of the Air War at sea; the expansion, achievements and organization of the Fleet Air Arm are reviewed by its historian, Mr. Owen Rutter; and Sir Archibald Hurd outlines problems which will face the shipping industry after the war.

During 1943 a great change came over the course of the U-boat campaign. When the year opened, the U-boats were almost at the height of their success; but within a few months, the Allied Navies had gained an upper hand which has been retained ever since. This remarkable development is reviewed in detail by Commander Pursey. Throughout the year under review the war has developed more and more as an affair of amphibious operations, and as these words are being written the subject bulks even larger in the public eye. The development of landing craft and the special material developed for these combined operations are described in a chapter by Mr. McWhinnie, who has had considerable experience as an observer of some of the exercises which led to developments he describes.

In the province of strategy and the human side of sea warfare as distinguished from the more material side, I print an analysis of "The Expansion of Sea Power in the Present War," by Dr. Herbert Rosinski, whose return to the list of contributors to "Brassey" I am glad to welcome. Dr. Rosinski's acquaintance with earlier writers on war, and particularly on Naval Strategy, is unrivalled and his analysis of the manner in which their theories and conclusions have been reaffirmed, in spite of tremendous development of material, particularly in the air, by the course of the present world war, is most illuminating. Captain Russell Grenfell contributes a considered review of a Dr. Bernard Brodie's "A Layman's Guide to Naval Strategy," recently published in the United States, a volume which has done much to present a balanced view of some of the new theories of which there has been such a plentiful crop in the last few years.

A layman's contacts with the British Navy are described in a chapter by Mr. Gordon Holman, whose experience as a War Correspondent afloat is probably unique. Nobody is better qualified than he to write of the relations between the Navy and the Press, though when I invited him to make them, as he has known them, the subject of a contribution to "Brassey," with that modesty which is characteristic of him he objected that his personal experiences could not be of general interest. I was—and am—of the opposite opinion, and I am glad that I was able to overcome Mr. Holman's reluctance. In the last chapter, Admiral Sir William James deals with the enormously important question of the human element in naval warfare and shows very clearly how even in these days of universal mechanization it is the man far more than the machine that counts.

I have been unable this year to include a chapter on the development and exploits of the United States Navy, though the former is dealt with comprehensively in Mr. McMurtrie's chapter. But the later has been covered very fully by the publication, in April 1944, of the report by Admiral Ernest J. King, Commander-in-Chief of the United States Fleet, to the Secretary of the Navy. I would have liked to reproduce this very comprehensive report in "Brassey"; but its length, over 40,000 words, precludes me from doing so, and I can only draw the attention of readers to that document for a detailed chronicle of the great achievement of the United States Fleet in the year under review.

The Reference Section has been revised by Mr. T. Thorpe, as completely as revision is possible in the conditions obtaining in time of war. No claim is made that this section is complete; all that is claimed for it is that as far as possible it embodies all reliable information that was allowed to become public property up till the end of 1943. As usual, I desire to acknowledge with appreciation and thanks the courtesy with which various authorities, British and Allied, have responded to my requests for information or assistance.

H. G. THURSFIELD.

UNIV. OF CALIFORNIA

CHAPTER I

A NAVAL CHRONICLE.

JANUARY.

There was little improvement at the beginning of the year in the U-boat war in the Atlantic. On January 10 a special announcement was issued from Hitler's headquarters that a group of U-boats had attacked a convoy sailing direct from Trinidad to Gibraltar which consisted exclusively of large tankers, estimated to be carrying 124,000 tons of oil fuel. According to the German account the convoy was completely destroyed in spite of a strong escort, thirteen tankers being sunk outright and three others torpedoed. Two days later a similar announcement reported the sinking of two more ships from the convoy previously claimed to have been completely destroyed! At the end of the month the German monthly summary of U-boat results claimed the destruction of 81 merchant ships, totalling 522,000 tons, of which 63 of 408,000 tons were sunk by U-boats. This claim was lower than of late, the diminution being attributed by the Germans to the bad weather. It was clear that the January sinkings were in fact lower than those of December, though the figures given by the Germans were greatly exaggerated.

During the month it was announced that Admiral Raeder had been succeeded as Commander-in-Chief of the German Navy by Admiral Doenitz, hitherto head of the submarine section of it. Doenitz was something of a fanatic on the subject of U-boat warfare and what the U-boat could accomplish. He had been a U-boat commander in the last war and was taken prisoner not long before the Armistice when the boat he commanded was sunk in the Mediterranean. He never accepted the defeat of the U-boats in 1918 as either justified or decisive, for in his view the U-boat might have won the last war if proper use had been made of it; and he devoted his life and energies thereafter to bringing that idea to fruition. In a speech to the German Naval Staff when his flag was hoisted over the German Admiralty he said: "The entire resources of the German Navy will henceforth be put into the service of inexorable U-boat warfare." That pronouncement was ambiguous; it might have meant either that the bigger ships of the German Navy would be laid up in order that their men and supplies could be diverted to the U-boat service, or it might indicate that they would be used more actively to support and supplement the U-boats' operations at sea. The subsequent course of operations seemed to indicate that it was the first meaning of the phrase that he intended; but in the meanwhile it was obvious that the Allies had to be prepared for the second.

During January, adoption of submarine supply ships—which must have been known to the Allied naval authorities, of course, for some time—was announced in a broadcast by one of the regular German naval commentators, Erich Glottsche. These submarines were larger than the combatant U-boats, carried large quantities of supplies and provisions, and according to a later German account were capable of making minor mechanical repairs at sea. They carried a large complement and were fitted with a well-equipped sick-bay, so that casualties in operational U-boats, or men who were ill, could be relieved at sea and given medical attention.

On January 25, Vice-Admiral V. W. Nelles, Canadian Chief of the Naval Staff made a most important announcement on the subject of the course of the U-boat war. He said " We have reason to believe that German U-boat strength is increasing. Our considered opinion is that the net amount is something more than 10 a month." Earlier in the month a semi-official statement had been made in Washington that there were then more than 100 U-boats operating in the Atlantic, and that meant that the total force of U-boats in service must be something like 400 all together. The fact that it was still increasing was clear evidence of the seriousness of the situation.

Two German ships attempting to run the blockade in the Atlantic, bringing supplies for Germany from the far east; were destroyed during the month. On January 2 the Admiralty announced that a German merchant ship of some 10,000 tons had been intercepted by British patrols in the Atlantic and on being overhauled had been scuttled by her crew who were then taken prisoners of war. No further details of this incident were made public, but the interception of the second blockade runner was described in much greater detail. The blockade runner, which was described as a large ship, was located in the Bay of Biscay by a Wellington aircraft of the Coastal Command. It was blowing a gale and there was much cloud and heavy rain so that observation from the air was difficult. The Wellington attacked the enemy ship with bombs but without success and soon afterwards was obliged to return to base for fuel, its place being taken by a Sunderland flying-boat from an Australian squadron of the Coastal Command. In the meanwhile H.M.S. Scylla, which was at sea somewhere near, had been informed of the position of the raider and was steaming to intercept her. In the bad weather which prevailed it is very unlikely that the cruiser would have been successful in finding her quarry if she had not had the assistance of aircraft, for she might have passed quite close to the raider without sighting her. The Sunderland, however, having started out in the morning had been quartering the area in which the enemy had been reported for some hours but had sighted nothing until early in the afternoon she made contact with the Scylla. A quarter of an hour later, continuing the search, she sighted the enemy, which owing to the heavy sea was making no more than 10 knots, some 20 miles away from the cruiser. Contact thus established was maintained and the Scylla, steaming at full speed in spite of the heavy seas, soon overhauled the enemy. Captain Macintyre of the Scylla had to bear in mind the possibility that the enemy ship might be a heavily-armed raider like that which sank the Sydney, and consequently he had to establish her character before getting to close range. He fired one salvo to fall ahead of the enemy as an order to her to stop ; but as instead of stopping the enemy began to alter course as she would have to if she were about to open fire, the Scylla at once fired to hit. Very soon the enemy was seen to be on fire, and it was noticed that her crew were abandoning ship. The Scylla ceased fire until the life-boats were clear of the ship and then sank the blockade runner with a torpedo. The Sunderland aircraft returned to base almost out of fuel and landed after being in the air thirteen and a half hours in weather as bad as it could be.

Although these two raiders were intercepted it seems quite probable that some others succeeded in getting through. The German need of rubber and wolfram—the ore of tungsten—was so urgent that it seems probable that a number of ships must have made the attempt. The approaches to the Bay of Biscay are so wide that to cover them all, even with the assistance of long-range aircraft, is almost impossible in the short and stormy winter days. Nevertheless not many can have succeeded in running the blockade.

HOME WATERS.

The passage of a convoy of supplies of war material to North Russia was briefly mentioned in last year's chronicle. The full story of it is as follows. When somewhere near Bear Island on the morning of December 31, 1942, a Russia-bound British convoy was attacked by a strong enemy squadron consisting of a pocket battleship, at least one cruiser and a number of destroyers. In those latitudes in the depth of winter there is no daylight, but only twilight from about 10.30 a.m. to 1.30 p.m. The weather alternates between furious gales and dense fog. These conditions to some extent favour the defence of convoys in that they make air attack, which had been such a menace during the summer, practically impossible. Moreover, seafaring skill, particularly at night or in heavy weather, comes only of great sea experience, and consequently those that possess it are at an advantage when conditions are difficult.

The convoy was protected by a force of destroyers under the command of Captain Robert Sherbrooke in H.M.S. Onslow—the successor to the destroyer of that name which was commanded in the Battle of Jutland by the then Commander-in-Chief of the Home Fleet, Admiral Sir John Tovey. When the enemy appeared, in spite of their overwhelming strength, Captain Sherbrooke at once led his destroyers to the attack. The enemy engaged them with gunfire, but would not face the threat of their torpedoes, and very soon altered course away under the cover of a smoke screen. During the next two hours the enemy three times more attempted to close the convoy, but on each occasion was driven off in the same way by the British destroyers. Captain Sherbrooke was not content merely to ward off the enemy's attempted attacks on the convoy; he followed them up as they withdrew and drove them well away from his charge and towards the British covering squadron—the composition of which was not announced—which was in the vicinity for the special purpose of dealing with attack by enemy heavy forces. Eventually this covering squadron came into action too, but as soon as the enemy began to suffer damage, they at once broke off the action and retired under the cover of darkness to the shelter of the Norwegian fjords.

Some forty minutes after the action opened Captain Sherbrooke was wounded by a German shell which hit the Onslow, and in the words of the *London Gazette*, " . . . lost the use of one eye. Nevertheless, he continued to direct the ships under his command until further hits on his own ship compelled him to disengage, but not until he was satisfied that the next Senior Officer had assumed control. It was only then that he agreed to leave the bridge for medical attention, and until the convoy was out of danger he insisted on receiving all reports of the action." For this skilful and courageous conduct of an action against an enemy overwhelmingly stronger, Captain Sherbrooke, who eventually lost an eye as the result of his injuries, was awarded the Victoria Cross; he already held the D.S.O. for his services in the Norwegian Campaign. Another British destroyer, the Achates, was also damaged in the action and she eventually sank before she could be got back to harbour. The convoy suffered no loss or damage and arrived intact in Russian ports during the first week of the month.

MEDITERRANEAN.

As the battle front approached Tripoli from the east, naval action in the narrows became more and more effective. Submarines were active in the central Mediterranean throughout the month ; their successes were announced by the Admiralty on January 1, 6, 8, 15, 18, and 25. Transports and supply ships moving across the Sicilian Channel, and also up and down the coast of Tunisia and Tripolitania, were constantly under attack and many of them were sunk. Two supply ships were reported sunk in the Gulf of Tunis on January 1 and a destroyer escorting an enemy supply ship off Bizerta. On January 6 the destruction of a troop transport and three supply ships in the Tyrrhenian Sea was announced ; on January 15 the destruction of two more supply ships and an Italian minesweeper off the Tunisian coast. On January 18 the destruction of a supply ship in the Gulf of Genoa and of two more off the coast of Sardinia was announced, and a British submarine bombarded a railway on the west coast of Calabria and set a train on fire. On January 25 an enemy supply ship off the coast of southern Tunisia, which from the strength of its escort was evidently of great importance, was sunk by a torpedo, while a large north-bound modern ship escorted by two destroyers was torpedoed off Marittimo. Another submarine off the east coast of Sardinia encountered an enemy supply ship escorted by two small naval craft ; she engaged the latter by gunfire, sinking one and damaging the other so that it had to be beached to avoid sinking. She then sank the supply ship with a torpedo.

Tripoli fell on January 23, but before that the enemy endeavoured to take away an Italian submarine which was lying there disabled. On the night of January 19 the submarine in tow of three tugs was encountered by British light coastal forces. They at once attacked, whereupon the tugs cast off the tow and endeavoured to escape. One was set on fire and driven ashore and the other two were frequently hit. The submarine was sunk by torpedo.

The destruction of enemy submarines, in accordance with Admiralty policy was not generally announced ; but on January 18 the sinking of one Italian submarine was made known because she had on board a number of British and American officers who had been taken prisoner during the African operations and were being sent back to Italy by submarine. The prisoners were all picked up, but their escape was miraculous. The submarine was located by a British aircraft from Malta, which at once attacked with depth charges and forced her to return to the surface ; the aircraft then attacked with machine-guns. One survivor described how the Italian crew panicked and waved white flags and shirts in token of surrender when the aircraft approached ; they then changed their minds, however, and opened fire with machine guns. The aircraft then summoned British destroyers which sank the submarine by gunfire. But the Allied prisoners were able to jump into the sea whence they were picked up by the destroyers, together with survivors of the submarine's crew.

Before evacuating Tripoli the enemy did their best to render the harbour useless. The entrance was blocked by lighters and a concrete barge sunk in it. At least ten big ships and many small ships, chiefly schooners, were sunk in the harbour; but none of them were in a fairway. Four days after the Allies captured the place the harbour was in use to some extent. Within a few weeks some 4,000 tons of stores a day were being unloaded there for the advancing army. The retreat north-westward was rapid. Zuara was bombarded from the sea on the morning of January 23, and it was occupied by the Eighth Army a day or two later.

The Italian and Sicilian ports, whence supplies were normally sent to the Axis armies in Africa, were bombed from time to time by the R.A.F. Palermo, for instance, was bombed on January 7 and Messina on January 30.

Naval torpedo aircraft working from Malta seconded the efforts of submarines and surface craft in interrupting Axis supplies across the Sicilian Channel. On January 19 they attacked two supply ships off the Tunisian coast, sinking one and severely damaging three others. On January 30 they attacked a supply ship off Pantellaria which was escorted by an Italian destroyer. The supply ship was not hit but the torpedo intended for her hit and sank the attendant destroyer.

INDIAN OCEAN.

The only incident in the Indian Ocean reported during the month was an attack by heavy bombers of the U.S.A.A.F. on a strongly escorted enemy convoy south of Rangoon on January 15. One supply ship of some 7,000 tons was destroyed by a direct hit and another slightly smaller was damaged by a near miss, but was apparently able to continue its voyage.

NEW GUINEA.

In New Guinea the advance north-westwards after the extermination of the Japanese in the Buna-Gona area continued, and continual air attacks were made on the Japanese concentration of shipping in Rabaul. Nine ships estimated to amount to 50,000 tons were destroyed there in a raid on January 5 and a man-of-war, probably a destroyer, was reported also to have been hit in that attack. In spite of these attacks the volume of Japanese shipping there appeared to increase during the month. On January 8 and the following days the Japanese attempted to pass a strong force of troops across to New Guinea to reinforce their hard-pressed garrisons there. The original convoy consisted of four transports escorted by two cruisers and four destroyers, joined on the eighth by two more transports. It was attacked by Allied bombers on its way to Lae, which it approached by daylight with strong fighter escort, and three transports were sunk; the remainder reached their destination during the day. They left Lae harbour the same night, still escorted by the warships, and withdrew to the north-eastward. Some reinforcements and supplies were landed in Lae harbour, but it was not believed that very many succeeded in getting ashore. In the air battles that these events brought on, 85 Japanese aircraft were reported definitely destroyed, with 29 more "probables."

A further attack was made on shipping in and near Rabaul on January 18 in which five medium-sized Japanese ships were either sunk or seriously damaged. Four more were hit on January 21, and an ammunition ship was blown up on January 24. The month ended with a failure of the

Japanese to reinforce their hard-pressed garrisons in Papua and New Guinea to the north-west of the frontier.

SOLOMON ISLANDS.

In the Solomon Islands the position at the beginning of the year was that there were still small Japanese forces holding out in Guadalcanal, but that all the Japanese attempts to relieve them, or reinforce them, by sea had been defeated and the enemy was reduced to the expedient of dropping supplies for them from the air. On January 2 a flotilla of Japanese destroyers was located to the north-westward of the New Georgia group and attacked by American dive-bombers escorted by fighters. One destroyer was set on fire and another one, when last seen, was apparently sinking. The same night, eight Japanese destroyers were attacked by American M.T.B.s near the northern end of Guadalcanal—apparently again trying to reinforce Japanese troops there—and one of them was torpedoed. The American report stated that three others had possibly also been hit. A similar engagement took place a week later on the night of January 10, the results being assessed at two torpedo hits on one destroyer, one hit on another and two possible hits on a third. As a result of this damage the Japanese force abandoned the attempts to land and retired to the north-westward. On January 20 the Navy Department announced that between January 13 and 17, 1,032 Japanese had been killed in battles in the island and on January 21 it was announced that Major-General Thatch of the U.S. Army had taken over command in the island from Major-General Vandergrift of the Marines, who had been in command there since the original landing in August.

On January 29 and 30 a series of engagements between sea and air forces took place south of Guadalcanal, near Rennell Island. The Japanese were first in the field with a description of these actions, in which they claimed that two American battleships and three cruisers had been sunk and that another battleship and cruiser damaged at a cost of only ten Japanese aircraft. Actually the only American losses were those of the cruiser Chicago—which was sunk by four torpedoes from Japanese aircraft which hit her simultaneously—one destroyer, three M.T.B.s and 22 aircraft. The loss of life in the Chicago was not large—only six officers and fifty-six men—and Captain Davis, her captain, survived. The Japanese losses were two destroyers sunk, four destroyers probably sunk and six destroyers, a corvette and two cargo ships damaged; 25 fighters, 12 torpedo aircraft and 20 other aircraft were destroyed, as well as a number of others damaged. According to the American account the Japanese had large concentrations of warships in the area, but were careful to avoid a surface engagement. It appeared afterwards that these operations were designed by the Japanese chiefly to cover the withdrawal of a large part of their forces from the island of Guadalcanal. A number of landing barges were sunk by American destroyers off Cape Esperance on January 30.

During the month repeated American air attacks were made on the airfield under construction by the Japanese at Munda, in the New Georgia Islands. Whether this field was yet in use by the Japanese is not quite clear. On January 23 and 24 American air and surface forces bombarded Japanese positions on Kolombangara Island, also in the New Guinea group, the first time that any indication was given of Japanese occupation of that

Island. On a number of days also during the month the Japanese airfield, seaplane bases and anchorages at and near Shortland Island, off the south end of Bougainville, were also attacked by air. Damage to a number of Japanese warships was reported from these attacks; one destroyer was hit by a bomb on January 20, and another, together with a cargo ship, on January 22. On January 27 another destroyer and cargo ship were hit and set on fire in the Vella Gulf, in the New Guinea group.

THE ALEUTIAN ISLANDS.

During the month American forces landed unopposed on the island of Amchitka, the nearest island to Kiska, occupied it and constructed an airfield there. The occupation was not publicly announced until May. Two cargo ships at Kiska were attacked by American bombers on January 1, but the results of the attack could not be observed. On January 5 an enemy cargo ship was sunk by American medium bombers 110 miles north-east of Kiska and the next day another Japanese cargo ship was hit by bombs in a position 185 miles south-west of Kiska. What the former was doing seems mysterious, but the latter was evidently engaged on the ordinary supply service between Japan and the islands they held in the Aleutians.

American submarines in various parts of the Pacific, but chiefly in Japanese home waters, continued to do good service, sinking a number of tankers and merchant ships.

LOSSES.

The losses of His Majesty's ships announced during the month were destroyers Firedrake, Blean and Partridge, the submarines Utmost and Traveller, the sloops Snapdragon and Marigold, the minesweeper Bramble and three trawlers.

FEBRUARY.

The losses of merchant shipping at sea continued to be serious during the month. No definite figures were announced by the Government, but Mr. Churchill on February 11 gave a review of the whole war situation, in view of the results of the conference at Casablanca which had just concluded. After referring to the losses suffered in the "great operation of landing in North Africa and maintaining the Armies ashore," and in the Arctic convoys to Russia, which in both theatres had fallen chiefly upon the British, he said, "In all these situations it was inevitable that the joint British and American losses in the past fifteen months should exceed the limits for which we British alone, in the days when we were alone, had budgeted. However, when the vast expansion in the United States shipbuilding is added to the credit side, the position is very definitely improved." He mentioned that out of some three million soldiers who had been moved about the world under the protection of the British Navy only, 1,348 had been killed or drowned at sea, and from that he deduced that "nothing is more clearly proved than that well-escorted convoys, especially when protected by long-distance aircraft, beat the U-boats." Nevertheless, he said, "The losses we suffered at sea are very heavy and they hamper us and delay our operations . . . we cannot possibly rest content with losses on this scale, even though they are outweighed by new-building, even if they are not for that reason mortal in their character."

He went on to foreshadow more and more effort being put into anti-U-boat operations, summing up his attitude to this aspect of the war in the sentence, " The U-boat warfare takes the first place in our thoughts." But he was not able yet to announce that the number of U-boats destroyed was greater than the number being put into service by the enemy. The latter number was estimated by Admiral Land, Head of the U.S. War Shipping Administration, on February 5 at one a day.

The air offensive against U-boat bases was continued and had been intensified during the month. Lorient was bombed on February 6 and 18 and Wilhelmshaven was bombed on February 13, 20, 23, and 27. In the first of these latter raids the main ammunition depot of the naval base was hit and blown up. The ammunition was stowed in fifty long sheds, the photographs taken by reconnaissance aircraft after the attack showed that no less than forty of the sheds had entirely disappeared. So greatly was the A.A. defence disorganised by this attack that some of the later raids were made entirely without loss. Nevertheless, the number of U-boats in service continued steadily to increase.

Although shipping losses were serious they did not reach the level claimed in German announcements. On February 7, Hitler's headquarters announced that U-boats had sunk sixteen ships totalling 102,500 tons. The next day another claim specified fourteen ships, though whether these referred to the same attack or was a new claim was not made clear. On February 22, another headquarters announcement claimed fifteen ships totalling 103,000 tons, four escort vessels and four transports. Two days later another claim stated seventeen ships of 104,000 tons and damage to three others. These figures added up to a formidable total, but it was never made quite clear whether they referred to separate attacks or whether individual attacks were reported more than once. A summary issued at the end of the month gave the figures as eighty-two merchant ships of 545,300 tons sunk by U-boats, as well as eight more ships sunk by E-boats and aircraft.

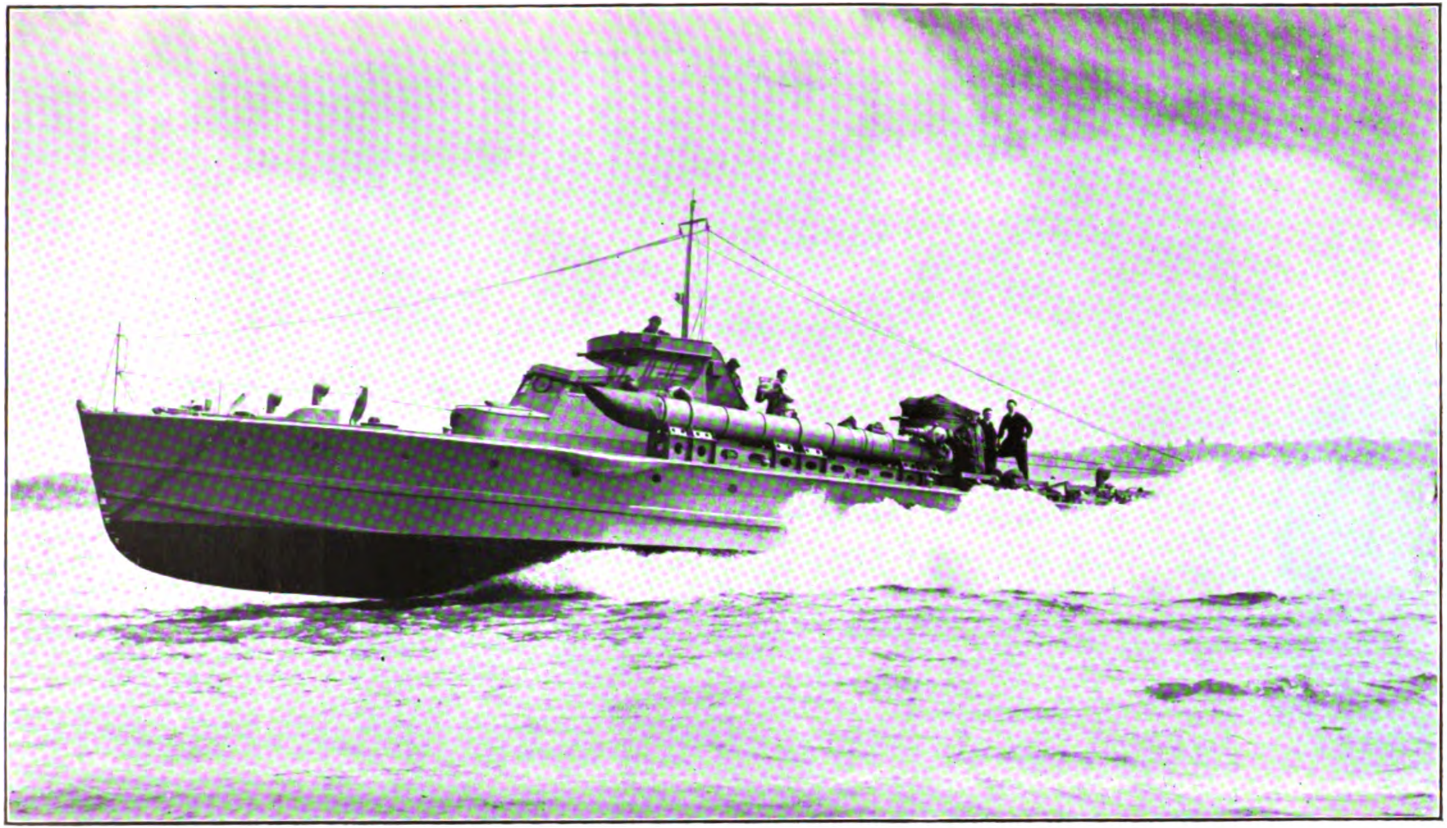
On February 17 the German wireless reported that the U.S. troopship John Ericsson had been torpedoed off the coast of Morocco. This seems to have been justified, since on February 22 it was announced in Washington that two transports had actually been sunk earlier in the month within four days of one another. Some 850 lives were lost, chiefly personnel of the services. The attacks were made at night, and each ship sank in less than half an hour.

On February 19 the formation by the South African Government of an anti-submarine flotilla of fast motor patrol-boats was announced in Cape Town. The boats, which were of 75 tons, were built in South Africa, but the engines and armaments were supplied from Great Britain.

During the month it was announced that the French battleship Richelieu, the cruiser Montcalm and a number of French destroyers, amongst them the two flotilla leaders Le Fantasque and Le Terrible, had arrived in United States ports for refit. They had come from West African ports where there were also other French warships, the disposal of which was not reported.

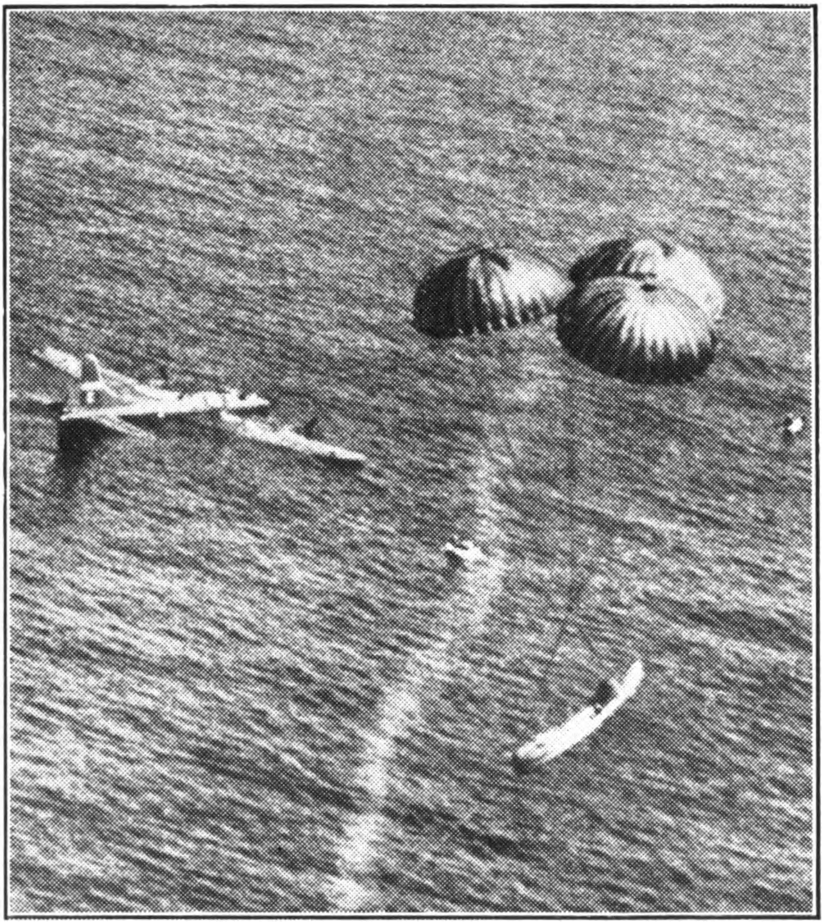
HOME WATERS.

Owing presumably to bad weather there was little activity by the Coastal forces and other light craft in home waters during the month. One attempted attack by E-boats on a North Sea convoy in the early



Thornycroft Motor Torpedo Boat.

(Courtesy of Messrs. Thornycroft.)



Sea-air rescue. Life-boat dropped on parachutes.

(Official photograph. Crown copyright reserved.)

hours of February 18 was reported. The E-boats were engaged at very close range—the weather was thick—by the destroyers Garth and Montrose and two at least were heavily hit, one of them being disabled. She blew up later, after survivors had been taken out of her. There were neither casualties or damage to the convoy or its escorts. The loss was announced on February 1 of the Norwegian man-of-war Bodo; neither the class of the ship nor the place or circumstances of her loss were disclosed.

On February 26 a large enemy tanker evidently attempting to run the Allied blockade and reach occupied France was located at 9.47 a.m. by an American aircraft which was operating as a unit of the Coastal Command not far from the Azores. The blockade-runner was shadowed by the aircraft while H.M.S. Sussex was summoned to intercept her. The Sussex made contact at 4 p.m. and opened fire, setting the enemy ship ablaze. Her crew abandoned her in four life-boats and she sank at 6.10 p.m. As U-boats and German aircraft were in the vicinity and witnessed the encounter the Sussex left it to them to pick up the survivors.

MEDITERRANEAN.

On February 16, the naval Commander-in-Chief, Admiral of the Fleet Sir Andrew Cunningham, in a public speech surveyed the progress of the war at sea up to date. Since the landing in North Africa 780 Allied ships totalling 6½ million tons had arrived safely at North African ports from Britain and the United States. Allied forces had developed new methods of protecting convoys and had been very successful against U-boats during the month. At the same time they had done much execution against enemy shipping and had destroyed about one-third of the enemy ships in the Mediterranean. The enemy, however, had seized about a hundred merchant ships from the French, and so had to some extent alleviated their shortage.

British submarines continued to do much execution against Axis shipping and announcements of their exploits were issued on February 4, 7, 17 and 22. These announcements reported the destruction of some 20 supply ships, which included a number of tankers, at least one transport and an anti-submarine patrol-boat. A number of these, including the patrol-boats, were sunk by gunfire, often within range of enemy batteries mounted on shore. Moreover, on several occasions submarines bombarded the Italian main railway lines where they run close along the Calabrian coast. One Italian submarine was torpedoed and sunk by the Dutch submarine Dolfijn, which was operating with the British Mediterranean submarine flotilla. Besides the Axis ships sunk a number of them were damaged by gunfire or torpedoes.

The execution done by submarine was supplemented by that of aircraft, both of the Fleet Air Arm and of the R.A.F. A number of convoys in various parts of the central Mediterranean were attacked by them on several days during the month by bomb and torpedo. One particularly useful success was the destruction of an Axis tanker by torpedo bombers from Malta on February 21 off Lavenzo, Tunisia. The loss of the three million gallons of motor spirit which she carried must have severely hampered the Axis military and air forces in Tunisia. On February 24 a bomb and torpedo attack was made on an Axis convoy off the north-western extremity of Sicily in which two large supply ships were sunk. Throughout the month the heavy bombers of the R.A.F. were busy in attacking the Italian ports from which Axis forces in North Africa were kept supplied. Naples, Cagliari, Palermo, Messina, Cotrone and Bizerta were attacked on a number of days, attention being paid chiefly to Naples where a number of ships were reported to have been hit as well as the harbour and dock installations. While the chief weight of the Allied attack was concentrated on the central area of the Mediterranean, the other Axis positions were not neglected. The airfields in Crete, particularly those at Heraklion and Kastelli, were attacked several times during the month.

PACIFIC.

The activities of the American submarines continued undiminished. On February 17 the Navy Department announced that a tanker, a transport, two cargo ships and one escort vessel had been sunk by them and that a cruiser had been damaged and probably sunk. On February 21 the loss of the Argonaut, the largest submarine of the U.S. Navy, was announced in Washington. Five more Japanese ships were sunk in the latter part of the month, bringing the grand total of Japanese ships sunk by American submarines since the beginning of the war up to 133. In addition, 23 probables were reported and 35 other ships damaged.

NEW GUINEA.

There was something of a pause in this area during the month, Allied effort being confined to air attack on Japanese occupied islands, chiefly their main advance base at Rabaul, which was attacked frequently during the month. In an attack made on February 23, three direct hits were reported on a warship which was either a cruiser or a large destroyer. The next day a large warship, attacked outside Rabaul, ran ashore in her efforts to avoid bombs. Occasional air attacks were also made on Japanese bases in Timor and farther west in Celebes.

SOLOMONS.

There was more activity in the Solomons area, where the Japanese continued their withdrawal from Guadalcanal. On February 1 a Japanese destroyer, corvette and a transport were attacked by American bombers and all three severely damaged, if not sunk. Twenty Japanese aircraft were destroyed for the loss of ten American. That night twenty Japanese destroyers approached Guadalcanal in order to continue the evacuation. They were attacked by American M.T.B.s which sank one; two others were reported probably sunk for the loss of three torpedo-boats. The next day another destroyer was hit. On February 4 a flotilla of about twenty destroyers was located some two hundred miles north of Guadalcanal and again attacked by American air forces, which sank one destroyer, disabled another and set one on fire. On February 7 two more Japanese destroyers were hit by bombs near New Georgia. By that time the Japanese withdrawal from Guadalcanal was complete, though they appear in the later stages to have withdrawn only officers and technical troops, leaving large numbers of infantry in disorganised groups to be wiped out by the American forces. On February 9 the Japanese announced officially that Guadalcanal had been evacuated. Soon afterwards the Americans occupied the Russell Islands, between Guadalcanal and New Georgia, without opposition.

Throughout the month American air attacks were concentrated chiefly on Munda, the airfield under construction by the Japanese in New Georgia, but frequent attacks were also made on the Japanese bases in the small islands at the south end of Bougainville. On February 17 a Japanese air attack was made on an American convoy south of Guadalcanal in which the Japanese claimed to have sunk two destroyers and one large transport. Actually no American ship was hit, but five out of the eight Japanese attacking planes were shot down.

ALEUTIANS.

Activity was confined to cross air attacks on either side. Japanese positions in Kiska were bombed on February 8, 24 and 27, while the Japanese aircraft attacked American positions in the western Aleutians on February 3, and 22.

LOSSES.

During the month the loss was announced of the Submarines P.222, and P.48, and the corvette Samphire and two trawlers. On February 16 the loss of the Canadian corvette Louisburg was announced in Ottawa.

MARCH.

The shipping situation in the Atlantic continued to be serious. On March 3 Sir Arthur Salter, head of the British Shipping Mission to the United States, gave to the American press a comprehensive review of the shipping position. Until August 1942 shipping losses by U-boat attack had been greater than the new construction, but since that date shipbuilding had overtaken losses; nevertheless, there was a very large shortage to be made up and moreover demands for shipping space were constantly increasing. The United States shipping administration was aiming at building 19,000,000 tons during 1943, a figure which depended upon the supplies of steel coming forward; but even if that figure were reached, he foresaw that the shipping shortage would continue at least for the remainder of the year. Admiral Sir Percy Noble, British Admiralty representative in Washington, in a speech in Philadelphia early in the month revealed that the results of the anti-U-boat campaign had been "encouraging during the last few months." He added, however, that the Germans were still building more U-boats than the Allies could sink, so that their total number was still increasing. The general situation was thus clearly still serious.

There was, however, one encouraging feature about it. The western Atlantic off the United States coast, which had been so fruitful a field for the U-boats in 1942, was no longer so. The efficiency of the defence afforded to shipping in that area had been brought up to the standard already achieved in the western approaches to the British Isles, with the result that the U-boats had been driven away from the American coasts. On March 8 it was announced from the headquarters of the U.S.A.A.F. anti-submarine command that not a single ship had been sunk off the American coast. This satisfactory result was largely brought about by the increased use of air forces for anti-U-boat patrols. The small dirigible balloons known as " Blimps " could be used in these waters which were out of reach of enemy aircraft—to which of course they would be exceedingly vulnerable—and they were particularly suitable in such circumstances for convoy escort. The net result was that U-boat attacks were perforce concentrated into the central area of the Atlantic where, at that time, no air support could be afforded.

German claims of tonnage destroyed continued to be on a high level. On March 11 they claimed to have sunk thirty ships of a total of 207,000 tons within twenty-four hours, including eight ships laden with munitions which blew up when torpedoed. The next day these figures were increased to forty-seven ships of a total of 282,000 tons. Three days later they claimed to have sunk seven ships off the east coast of South America and seven other ships in other parts of the Atlantic. On March 24 a special announcement from Hitler's headquarters claimed fifteen ships of a total of 73,000 tons out of one convoy bound to Gibraltar from America. The total German claim for the month was 138 ships of 851,600 tons. The real figures were, of course, not announced in Britain or America, but at the end of the month Mr. Elmer Davis, Head of the American Office of War Information, revealed that March had been worse than recent months. " But not so bad as March 1942."

On March 16 an announcement was issued of an important conference which had been held in Washington between American, British and Canadian officers, with Admiral King, Commander-in-Chief of the U.S. Fleet, in the chair, on the co-ordination of anti-U-boat operations between the three Navies. The British senior representative was Vice-Admiral Sir Henry Moore, Vice-Chief of the Naval Staff; with him was Air Vice-Marshal Durston of the Coastal Command; Rear-Admiral V. Brodeur, with Air Vice-Marshal Anderson, represented the Canadian Navy and Air Force. The details of the arrangements concluded were not of course disclosed, but there is no doubt that the conference achieved enhanced collaboration which was most valuable.

A description was issued during the month of one of the battles which were of constant occurrence between U-boat packs and escorts of Allied convoys, which had taken place some time before. The naval escort included the destroyers Beverley and Vimy from the British Navy and the U.S.S. Babbitt; the British corvettes Mignonette, Abelia, and Campanula; and the Free French corvette Lobelia. Liberator and Sunderland aircraft of the R.A.F. took a hand as soon as the convoy came within their range. The first U-boat was sighted in the morning, seven miles away, by the Beverley, which at once closed, calling in the Vimy to join in the attack. When two and a half miles off the U-boat dived, and the Beverley manœuvred to circumscribe her movements while the Vimy started a hunt, located the submerged enemy, and attacked. Her third depth-charge attack brought the U-boat to the surface between the two ships, evidently about to sink, since her crew started to abandon her. But both destroyers had opened fire as she broke surface, and in a few moments she sank vertically by the stern; 40 survivors were picked up by the Beverley, nine by the Vimy.

That night the attack was renewed by five more U-boats, the first of which was chased on the surface by the Beverley, which failed to ram her because of intermittent mist. She hit her with Oerlikon and Lewis guns at 200 yards range, and dropped depth charges over her as she crashdived. On her way back to rejoin the Vimy with the convoy, the Beverley made an almost similar attack on another, though she got no nearer than 500 yards. The next day she attacked two more with promising results. The convoy did not escape without loss, and during one night the Mignonette had more than once to break off the work of rescuing survivors in order to engage and drive off U-boats attacking on the surface. Coastal Command aircraft reported destroying one U-boat and damaging four others, and the Lobelia was credited with one U-boat "probably destroyed."

The news became public in the course of the month of a number of sweeping changes recently made in German naval commands, evidently the result of the succession of Admiral Doenitz to the chief command. Practically all the Admirals senior to Doenitz were replaced and a number of younger Admirals appointed to commands in their place. One of the most significant changes was the appointment of Admiral Fricke, hitherto Chief of Naval Operations, to the Mediterranean area. Fricke was known to be an energetic and forceful person, and this appointment was interpreted as evidence of the German intention to make more use of the Italian Fleet. Admiral Karls, hitherto in command in the north, one of the ablest and most popular officers of the German Navy, was relieved and put on the unemployed list.

HOME WATERS.

Light forces began to be more active again during the month with the improving weather. Nine actions between coastal forces and either E-boats or other convoy escorts were reported during the month, in addition to several occasions on which enemy light craft were attacked from the air. In the early morning of March 8 a destroyer on patrol off the east coast surprised a flotilla of enemy E-boats and drove them eastwards. In their retreat they were intercepted and engaged by British coastal forces, which destroyed one E-boat by gunfire and damaged others. Two days later, British coastal forces operating off the Dutch coast engaged three German patrol craft, set one on fire and severely damaged another. An hour later they attacked a large tanker which had a strong escort, setting the tanker on fire with two torpedoes and inflicting substantial damage on the escorts. One British boat was lost in this action. The same day a detachment of coastal forces manned by Free French officers and men torpedoed a supply ship off the coast of Brittany without damage or casualties to themselves. Two days later still, on the night of March 13, these exploits were repeated close to the Straits of Dover. A supply ship was torpedoed and its escort engaged at the cost of slight damage and a few casualties.

On March 16, British coastal forces, again operating off the enemy coast, attacked a convoy off Terschelling. Two attacks were made and in spite of heavy gunfire both from the escort and the ships in convoy, one large enemy supply ship was torpedoed in each attack. There were no British casualties. This action was duplicated on the night of March 23. Again two attacks were made and three of the enemy escorts were damaged by gunfire, one of them seriously; whether damage was done to the convoy could not be observed. One British rating was slightly injured and two of the boats were slightly damaged. An attack on March 28 was more successful. One enemy supply ship, which would seem to have been laden with explosives, was blown up and another severely damaged off the

Dutch coast, at the cost of two minor British casualties. In the early hours of March 29 a strong flotilla of E-boats was intercepted off the east coast and engaged by British M.G.B.s. Two E-boats were definitely destroyed, one being blown up and the other having her stern cut off by being rammed by a British boat. At least three other E-boats were severely damaged by gunfire and others were hit, though the effect of gunfire in this case could not be observed. Destroyers on patrol in the same area also engaged E-boats and reported making a number of hits, but again the full result was not ascertainable. There were no British casualties and the only damage was to the bows of the boat which rammed one of the enemy.

The enemy light craft suffered punishment also from British air forces. On March 5, four E-boats were attacked by Typhoons and Spitfires of the Fighter Command when on their way back to Germany, presumably after having been in British waters during the night. Two of them were sunk by cannon fire. On the night of March 25 four R-boats were sighted near Boulogne by naval Albacore aircraft, which were operating as a unit of the Fighter Command, and one of them was sunk by bombs.

On March 14 light coastal forces of the Royal Norwegian Navy attacked enemy shipping in the harbour of Floroe, about 90 miles north of Bergen, and torpedoed and sank two large ships. Shore batteries fired on the attackers but without result, and there were no casualties. Two exploits by Norwegian patriots were reported through German channels in the course of the month. On March 2 the German radio alleged that the small passenger steamer Tromsœsund had been seized by twelve British agents and taken to sea with the object of reaching this country ; and went on to describe how it was sunk with all hands by one bomb from a German aircraft the following day. On March 22 the Germans alleged that a group of saboteurs had landed on the Norwegian coast from British motor-boats, but were immediately spotted and driven back to their boats by German coastal guards who inflicted heavy losses on them at the cost of one German killed and one wounded.

MEDITERRANEAN.

Naval operations were still confined to attack on the enemy's sea communications with his rapidly dwindling territory in Africa, and collaboration with the Army in its advance along the coast. British submarines continued to take a heavy toll of Axis shipping in the central Mediterranean, as did the air forces based on Malta. On March 4 an announcement was made by the Admiralty that a British submarine had recently bombarded a ship-building yard on the Italian coast near Genoa, and made several hits with high explosive shell on two ships building on the stocks. Other submarines bombarded the main-line railways, which in many parts of Italy run close along the coast, and engaged shore batteries in gun duels on more than one occasion. The destruction of seven enemy ships was announced in this statement. On March 19 a similar statement was issued announcing the destruction of four large supply ships, a medium-sized tanker, two small supply ships and a naval auxiliary. On March 31 the destruction of six more enemy ships and serious damage to four others was announced.

Axis convoys were attacked from the air on March 3, 13, 17 and 20, and a number of ships were sunk, though the result of the attacks could not always be observed. A large enemy destroyer was reported to have been hit by a torpedo on March 20 in the central Mediterranean, but it was not claimed that she had been sunk. As before, air attacks on the terminal ports of Naples, Palermo and Messina were made on every possible occasion.

On March 19 Rome radio announced that Admiral Doenitz had paid a visit to Italy from March 15 to 17, and had frequent conferences with Admiral Riccardi, the Italian Chief of Naval Staff. The report of course added that complete agreement was reached on all questions of naval collaboration between the Axis powers. Actually it seems fairly certain that the object of Admiral Doenitz's visit was to urge on the Italian navy a more active policy of participation in the war. It is perhaps permissible to doubt the completeness of the degree of agreement reached between the two Admirals.

On March 15 twelve aircraft attacked a British convoy somewhere off the Tripolitanian coast. They were engaged by H.M.S. Derwent, destroyer, and two of them were shot down and another damaged. The Derwent had neither casualties nor damage. The same day a similar attack was made on another convoy off the Tunisian coast. One bomber was shot down by the Vanoc, destroyer, and another was severely damaged by the Verity and was considered "probably destroyed." Both attacks, as far as the convoys were concerned, were successful.

NEW GUINEA.

The early part of the month in New Guinea waters was notable for the destruction of a large Japanese convoy carrying reinforcements for the Japanese posts at various points in the Huon Gulf, of which Lae and Salamaua were the most important. The convoy, carrying the Japanese 20th and 51st Divisions, together with special troops, sailed from Rabaul with a strong escort of warships about February 28. Apparently with the object of avoiding being conspicuous at sea, it started in several separate bodies and made a detour to the northward before approaching the Vitiaz Strait. A part of it was observed by Allied reconnaissance aircraft on the evening of March 1; they sighted seven transports escorted by seven cruisers or destroyers steering west off the Willaumez Peninsula. No attack was made on it that night, presumably because north of New Britain the enemy could provide fighter support whereas the Allies could not.

The next morning it was again located while entering the Vitiaz Strait from the north; by that time it consisted of twelve transports escorted by three cruisers and seven destroyers and it was provided with strong Japanese fighter support from the airfields both of New Britain and New Guinea. Allied air forces at once attacked and very soon established complete ascendancy over Japanese air forces, which before very long were practically eliminated. The bombers could then devote all their attention to the convoy and its escort, and so effective were their attacks that by the end of the day nearly all of the twenty-two Japanese ships had been sunk. Two Japanese destroyers remained afloat when night fell, but they were both disabled and were quickly located and sunk the next morning; 136 Allied aircraft of all classes were engaged. Of these no more than one bomber and three fighters were lost. Others were damaged, some severely, but succeeded in returning to their base. Sixty-three Japanese aircraft were destroyed for certain and it was stated that

102 in all had been put out of action. These figures included a certain number destroyed on the ground on the airfield at Lae.

Japanese troops who survived the air attacks that sank their ships took to life-boats, rafts and such landing craft as remained serviceable. They tried to get ashore in these as near as possible to their original destinations in the Huon Gulf with the object of reinforcing the garrisons at Lae, Salamaua and the other positions held by them. The Allied aircraft, as soon as the transports were destroyed, turned their attention to these smaller craft in which the enemy were trying to complete their voyage, and sank all of those which seemed to have any chance of reaching the New Guinea coast; no more than 92 Japanese out of a total of some 15,000 that started reached New Guinea itself. Some boats and rafts were carried on to the south-eastward by the current which runs through the Vitiaz Strait and their occupants managed to struggle ashore at various places in Papua and in the Trobriand and D'Entrecasteaux Islands. All these scattered parties were quickly rounded up and wiped out.

Rarely can there have been so complete a victory at sea, though the forces engaged were of course very small compared with the whole of those in the Pacific area. When the news of it was made public it was acclaimed in some quarters as conclusive proof that air power had superseded sea power, that warships were obsolete; as proving conclusively, in short, all the new theories of warfare which in the words of a recent American author are " flowering all over the landscape." In reality, of course, it proved nothing of the sort; it proved nothing that could not have already been deduced from earlier experience, which had shown very conclusively that, provided that there is no adequate opposition in the air, aircraft in sufficient force and sufficiently skilfully handled can destroy any ships rash enough to expose themselves to their continued attacks. The *New York Times* of March 9 summed up the conclusion to be drawn from the battle much more soberly in saying " the Allied victory in the Bismarck Sea turns out to have been not only an Allied air victory over Japanese sea forces, but what is even more important, an Allied victory over Japanese air power." The strength in the air such as the Allies assembled in the battle in the Bismarck Sea could and did prevent the Japanese in New Guinea from being reinforced; it could not alone turn them out of their strongholds in that land though it could be, and was, of immense help to the Armies which later accomplished that task. And, moreover, it could not, except as one element of the sea power which had eventually to be exerted, expel the Japanese from the other islands which they held farther to the north.

Having failed to reinforce their positions in the area of the Huon Gulf, the enemy took steps to strengthen those they held farther to the north-west. A number of convoys were dispatched from Rabaul towards Wewak from time to time, many of which got through under the shield of bad weather. One of these convoys, however, was located on March 13 and was attacked from the air, when it was reported that a large transport had been hit and set on fire, while a small tanker was believed to have been sunk. A Japanese destroyer was also reported hit by a bomb. On March 29 the enemy, abandoning the attempts to get transports through, sent reinforcements for the Huon Gulf in four fast destroyers, doubtless in the hope that they would be able to get through in the bad weather that prevailed. They were located, however, by air forces and attacked, not only that day, but also during the night. Just after midnight Allied bombers reported hitting a large destroyer with a 500-lb. bomb; it was believed that she sank as she was not seen again, and there were only three destroyers in company when they were sighted for the last time at 11 a.m. the next day north of New Britain.

SOLOMONS.

The Americans continued to hammer away at the Japanese positions in New Georgia and the other islands of the group farther to the north. On March 5 the Japanese positions at Munda in New Georgia and Buin in Bougainville were bombed from the air and the following night Munda, and Vila near it, were both attacked by what were described in the Navy Department announcement as "Light surface units." Japanese warships were engaged and two large Japanese destroyers were sunk; no American ship was lost. Munda was bombed again on March 10 and Bougainville and Choiseul were also bombed on several days during the month. On March 29 a Japanese destroyer was attacked by American fighter aircraft near Shortland Island and set on fire.

ALEUTIANS.

In the Aleutians, Kiska was bombed on six separate days during the month, increasingly heavily towards the end of the month. On March 26 a Japanese force of two heavy cruisers, two light cruisers, four destroyers and two cargo ships, evidently intending to reinforce the Japanese garrisons, was engaged west of Attu by a United States force, consisting of one heavy cruiser, one light cruiser and four destroyers. The action continued for three and a half hours and hits were made on both sides; eventually a torpedo attack by three of the American destroyers caused the enemy to break off action and withdraw to the westward. American casualties were light.

LOSSES.

During the month the loss was announced of the destroyer Lightning, the submarine P.331, the minelayer Welshman, the corvettes Erica and Fidelity, and two trawlers. In Ottawa the loss of the corvette H.M.C.S. Weyburn, which had been sunk some months before during operations off the north African coast, was also announced.

APRIL.

The rising tide of shipping losses was checked during the month, though the improvement was not very marked. Mr. Churchill in Parliament on April 13 was able to say that, taking new shipbuilding into account, "We are more than holding our own." Actually, though the fact was not made public until many weeks later, much of the improvement was the result of an increase in the number of U-boats destroyed. But Captain L. P. Lovette, the Director of Public Relations of the United States Navy Department in a speech on April 18 estimated the number of U-boats in service still at something between 400 and 500. He gave his audience some details of the improved construction of U-boats, which enabled them to survive damage much more severe than would have been necessary to destroy U-boats of earlier types. From German sources it was stated that as a result of various measures the time and effort needed to build a U-boat was being progressively reduced. The man hours needed and the more valuable raw materials such as copper tin and rubber, had been reduced from 40 to 50 per cent. since the beginning of the war without any falling off in quality.

German reports of numbers and tonnage of ships sunk continued to be poured forth from Hitler's headquarters during April though at slightly longer intervals than hitherto. On April 13 it was claimed that in one attack on a convoy 21 ships of 138,500 tons were sunk, and that six other ships had been torpedoed by U-boats hunting singly in the Caribbean Sea and off the coast of South Africa. The German News agency description of that convoy attack placed it off the south tip of Greenland and alleged that a British destroyer had been rammed and sunk by a U-boat, which suffered only minor damage in the process. On April 25 a special announcement stated that a U-boat commanded by Lieutenant-Commander Von Bülow had sunk the American aircraft carrier Ranger in the North Atlantic. For this feat Commander Von Bülow was awarded by Hitler the oak leaves of the Knight's Cross of the Iron Cross. The next day the Navy Department in Washington stated that neither the Ranger nor any other United States aircraft carrier had been sunk or damaged in any ocean. On this occasion, as on others, the oak leaves would seem to have been fairly easily earned! It was not until April 28 that the first hint was given to the German public that things might not be going quite so well with the U-boats as heretofor. "Our U-boats, moreover," said Admiral Lützow in a broadcast, "are faced with a plentiful and most cleverly handled defence. Furthermore, the enemy has most effective depth charges and water bombs in his arsenal." He went on to speak of their having to contend against "the sea-wise and war-wise British."

HOME WATERS.

Coastal forces were active throughout the month. On April 4 a flotilla under the command of Lieutenant D. G. K. Richards, R.N. engaged four enemy armed trawlers off Dunkirk, sank one of them, picking up thirteen survivors, and damaged the others, at the cost of three ratings wounded. The German account of this action, broadcast the next day, stated that all British boats were hit by shell fire from light and medium guns mounted on shore. On the nights of March 11 and 12, other flotillas had several brief engagements with German patrol craft close to the Dutch coast in which much damage was done to the enemy boats and very little to the British. Unfortunately on the second night a chance shot killed Lieutenant-Commander R. C. Hitchens, the commanding officer—the only casualty in the flotilla. He was one of the most outstanding figures of the Coastal Forces. A solicitor by profession, he was an enthusiastic yachtsman and a racing motor-driver in his spare time. He joined the R.N.V.R. immediately the war broke out and after serving for a time in a minesweeper was transferred to the Coastal Forces, where he quickly made his mark as an outstanding leader. He took part in more than fifteen actions and earned the D.S.O. and bar and D.S.C. and two bars. He was a man of very quiet manner, but of a tenacious disposition and a great capacity for attention to detail. It was said of him that his successes were due as much to his care in thinking out and devising new tactics, and attending to every detail beforehand, as to his outstanding daring and courage. His death was a great loss not only to the Coastal Forces but to the Navy as a whole.

A number of actions took place on April 15. In the early morning naval aircraft operating under the Fighter Command of the R.A.F. sighted a strong force of E-boats off the East Coast. The destroyer H.M.S. Westminster and sloop Widgeon intercepted them and in the action which ensued two E-boats were set on fire. One of them was seen to blow up, but the other disengaged behind a smoke screen ; soon afterwards the flash of a large explosion was seen in this direction, so there is good reason to suppose that both of them were destroyed. Four other E-boats were hit before they could disengage, and the whole flotilla was again bombed by Albacores of the Fleet Air Arm during their return passage. There were no British casualties or damage. The same evening a flotilla under Lieutenant-Commander Peter Scott engaged three armed trawlers off Le Havre. One of them was left stopped, silenced and on fire, though she was not actually seen to sink. Two days later a flotilla commanded by Lieutenant Peter Dickens, R.N. engaged three enemy trawlers off Scheveningen and sank one of them. Only superficial damage was sustained by British boats, but one officer was killed and two ratings were wounded by brisk gun-fire from the enemy. The next night an enemy convoy with a strong escort was engaged off the Hook of Holland by a flotilla commanded by Lieutenant Trelawney, R.N.V.R. One supply ship was definitely sunk and another probably sunk ; there were no British casualties or damage. Lieutenant Dicken's flotilla had yet another success during the month, when it engaged and sank an enemy armed trawler off Ijmuiden on April 29. The night before that action an enemy convoy with a strong escort was intercepted off the coast of Brittany not far from Ushant, by the " Hunt " class destroyers Goathland and Albrighton. It seems probable, though the official announcement was silent on the point, that the convoy, which consisted of several ships, at least one of them large, was carrying important war supplies for the garrison at Brest. The action lasted more than an hour and the attack of the British ships caused considerable confusion in the enemy flotilla, several of their ships being seen to fire on one another. Two of the escort were set on fire by gunfire from the British ships and one almost certainly sunk, while an E-boat which was also hit blew up. The destroyers pressed their attack home to close range and hit a large supply ship and another of medium size with torpedoes as well as gun-fire ; both of these were believed to have been sunk. Neither British destroyer sustained more than slight damage and a small number of casualties. What may have been the same convoy was attacked by Whirlwind bombers of the Fighter Command after daylight, off the coast of Brittany. Two minesweepers and a trawler were hit by bombs and the remainder of the enemy ships were attacked by machine gun and cannon fire. One of the minesweepers which was hit by four bombs may have been sunk, but it was not claimed that any others were. Mining operations, chiefly in the Baltic, but also in other enemy waters, were carried out on a large scale throughout the month.

MEDITERRANEAN.

On April 2 changes were announced in the Italian Naval Commands. Vice-Admiral Carlo Bergamini became Commander-in-Chief of what were described as the " Naval battle forces " ; Vice-Admiral Eduardo Sommigli, Commander-in-Chief of the convoy escort forces. The bombing of the Italian ports of Naples, Palermo, Messina, Carlo Forte and Cagliari continued at frequent intervals throughout the month and much damage was done to the harbour installations, though there is no doubt that the towns themselves suffered at the same time. On April 10 the American heavy bombers made a daylight attack on the big Italian cruisers Trieste and Gorizia, which were located lying in harbour at La Maddalena close to the Straits of Bonifacio. Their bombing, of which photographs were published in the Press, was remarkably accurate ; both ships were hit, the Trieste so severely that she sank. The Gorizia was able to get away and was taken to Spezia for repair. It had been calculated, from published reports of Itàlian ships that had been sunk by submarine or air attack, that there could only be one Italian heavy cruiser left out of the seven that were in existence at the beginning of the war. That calculation was obviously refuted by the presence of two of them, both in sea-going condition, in harbour at La Maddalena. It was therefore surmised that the calculation was possibly even more erroneous, and that there might be one or more others beside the Gorizia still afloat. There was no means at that time, however, of verifying or disproving that supposition.

The Army's advance through Tunisia continued steadily during the month. On April 4 the harbour at Tripoli was reported sufficiently clear to be put into full use for the supply of the armies then operating beyond it. The enemy still had the use of the harbours of Sfax and Sousse, up to the time, on April 11 and 12 respectively, that they were occupied from the land side. They had been severely and continuously bombed from the air for many weeks past, with the object of denying the use of the harbours to the enemy. But that object was never attained, for although both towns were practically levelled to the ground, coastal barges continued to use the harbour of Sfax, and both ships and barges the harbour of Sousse, up to the time both towns were occupied. The experience here seemed to indicate that it is possible to put too high a value on what air attack is capable of accomplishing, in the way of inhibiting the use of a port. The fact that it proved possible to bring Tripoli harbour into use for our own purposes so soon after its occupation, in spite not only of the continuous bombing to which it had been subjected for two years but also of the enemy's attempt at sabotage when they left, points in the same direction. On April 18 the naval dockyard at Spezia was bombed by aircraft working from England. Many of the dockyard plants were hit and one of the newest and largest Italian destroyers was reported sunk.

British submarines were as active as ever during the month. Announcements detailing their successes were issued on April 4, 7, 12, 24 and May 1. No less than eight tankers taking fuel to the Tunisian ports were intercepted during the month in these attacks and torpedoed. Most of them were hit by more than one torpedo and were believed, if not observed, to have been sunk ; but as they were all provided with particularly strong escorts of destroyers and other anti-submarine craft it was not always possible definitely to observe the final result of the attack.

Early in the month a submarine commanded by Lieutenant A. C. G. Mars penetrated into the Strait of Messina and there torpedoed an Italian cruiser of the " Regolo " class—a particularly daring and skilful attack. This was the first intimation to the public that any of the "Regolo" class cruisers, which had just been ordered at the beginning of the war, were completed and in service. At the beginning of the month it was computed that the submarine flotilla operating from Malta as a base had up to date sunk 82 Axis ships, including at least 12 warships and damaged many others in the last two years. Good service was also performed by the Greek submarine Katsonis, operating in the Ægean, and by the Dutch submarine Dolfijn, in the central Mediterranean.

The advance of the Army northwards through Tunisia gave more and more opportunities for naval action off the Tunisian coast. During the night of March 31–April 1 British M.T.B.s surprised an enemy convoy of three ships with a strong escort and torpedoed two of them ; one of them was seen to sink and another, hit by two torpedoes, was almost certainly sunk. The British boats sustained neither casualties nor damage. On April 15 two British destroyers encountered two Italian destroyers in the Sicilian Channel and sank them both. Sir Andrew Cunningham, speaking to Press representatives the next day, stated that nearly every night there was brisk fighting between British M.T.B.s and similar craft of the enemy's off the coast of Tunisia. He also stated that more than ten and a half million tons of Allied shipping had been employed supplying the Allied forces in North Africa and that on one night in March there had been more than a million tons of shipping at sea between Gibraltar and the most forward supply port of the troops in Tunisia. Nevertheless the overall losses of shipping by all forms of enemy attack had been under 2½ per cent. The same night that the two destroyers were sunk, M.T.B.s attacked an enemy convoy off the Gulf of Tunis which was escorted by destroyers and sank one of the merchant ships in the convoy. Shortly afterwards naval aircraft made another torpedo attack and hit a tanker in the convoy with two torpedoes. So effective was the naval action all round Tunisia that when the enemy decided on withdrawal he provided large troop-carrying aircraft in large numbers for that purpose. On April 18 no less than 58 of the enormous Junkers 52 transports were shot down into the sea by British and American fighters. This exploit was repeated a few days later when every one of a convoy of 20 Messerschmidt 323s, each capable of carrying 120 troops with full equipment, were also shot down into the sea. Other transport aircraft in smaller numbers were also destroyed on other dates, with the result that that method of evacuation was abandoned.

One operation by a British destroyer flotilla in the Sicilian narrows was described in the Press by a correspondent who was on board one of the ships. On the night of April 28—a fine night, with a light north-easterly breeze that made it ideal for the operation of E-boats—a ship was sighted from the British flotilla some miles off at 10.30 p.m. The destroyers approached under easy steam so as not to disclose their presence by bow-waves, and when about a mile off they observed that the ship was escorted by six E-boats in line ahead. They at once closed at full speed, zigzagging to avoid torpedoes. One E-boat was rammed and cut in half, four others were disabled by gunfire and set on fire, the ship they were escorting was sunk, and though several enemy torpedoes were dodged by no more than a few yards, there were no damage or casualties on the British side.

The island of Pantellaria was bombed on April 13 and at frequent intervals thereafter. The smaller islands of Lampedusa and Linosa were also bombed occasionally. These operations were doubtless undertaken with the object of impeding the escape of any Axis forces from Tunisia by way of the island fortresses.

On April 29 it was announced that Admiral Sir Henry Harwood had been compelled by ill health to relinquish his appointment as Commander-in-Chief, Levant. He was succeeded temporarily by Vice-Admiral Sir Ralph Leatham, who was given the acting rank of Admiral while holding the command.

NEW GUINEA.

Frequent Allied air attacks were made on Madang and Wewak in New Guinea itself, besides the larger Japanese bases at Rabaul and Kavieng. On April 8 Allied aircraft reported having sunk two enemy cruisers and a destroyer in an attack on Kavieng, and having damaged a 6,000-ton cargo ship and two destroyers, besides other shipping assembled there. An attack was made the next day in which direct hits were reported on two destroyers, one of which may perhaps have been a cruiser, as well as a number of other ships. The attack was made just before dawn, so that accurate observation was not possible in the imperfect light. On the next day it was stated that the enemy's naval concentration in that area had been completely dispersed, though the day afterwards it was stated that there was still shipping there, including one damaged cruiser which had been beached. The announcement from General McArthur's headquarters stated that seven Japanese warships of the cruiser or destroyer type and five merchant ships to a total of 36,000 tons, had been either sunk or severely damaged, and that three more destroyers were believed to have been possibly damaged. A new technique of attack had been developed which enabled these substantial results to be achieved with very small loss of Allied aircraft.

On April 12 a Japanese convoy in Hansa Bay, 85 miles north-west of Madang, was attacked by Allied heavy bombers. Two cargo ships were hit, set on fire and destroyed.

Thé Japanese then endeavoured to emulate these results. They strongly re-inforced their air-forces in the New Britain and New Guinea areas and on April 10 attacked Allied shipping in Oro Bay, south of Buna, with 45 dive-bombers protected by fighters. Five bombers and two fighters were destroyed and the remainder driven off by Allied fighters; only one small ship was hit and she was saved from sinking by being beached. The next day a hundred Japanese aircraft, half bombers and half fighters, attacked Port Moresby in the endeavour to put the airfields out of action. 21 bombers and 10 fighters were destroyed and six more so badly damaged that they certainly could not have returned to their base. Allied losses were " relatively light." The next day, April 14, the Japanese attacked Milne Bay with a force of 46 bombers escorted by 30 to 50 fighters. Three small ships there were hit, one of which had to be beached; 24 enemy bombers were destroyed, six more were damaged and driven off. Allied losses again were described as " moderate."

The next day, April 15, it was again the Allied turn to attack. A Japanese convoy of six merchant ships, escorted by three men-of-war, was sighted approaching Wewak and attacked at dusk by Allied heavy bombers. Three large merchant ships were hit and sunk while a third was only saved from destruction by being beached. While the ships were being attacked the Japanese airfields at Wewak were bombed at the same time in order to prevent Japanese fighters from getting into the air and interfering with the attack at sea. This attack was repeated five days later when a 6,000-ton tanker was destroyed in Wewak harbour, as well as a small harbour craft. On April 24 heavy bombers attacked Kendavi, the main Japanese air-base in the Netherlands East Indies, destroying at least five Japanese bombers on the ground and doing much damage to workshops and other installations. Attacks on other Japanese bases in the N.E.I. were continued at frequent intervals from this time onwards, Kupang in Dutch Timor being attacked on April 19 and April 29.

Towards the end of the month Japanese submarines became active in some force off the east coast of Australia. One medium-sized American ship, one large and two small Australian and a small Norwegian were sunk by them, though most of the companies were saved by the prompt action of patrol craft. The official announcement stated a week later that " our shipping continued to operate in virtually undiminished volume under the protection of our naval and aircraft units." Since no further announcement was made of losses by submarine attack, it is to be assumed that the counter-measures taken were so successful that enemy activity in that area ceased.

SOLOMONS.

Early in the month a considerable air battle flared up in the Solomons area. It started on April 6 with an attack by American dive-bombers on the Japanese station at Vila in the New Georgia group. The Japanese retaliated the same evening with an attack on Guadalcanal. The next day Allied attacks were made on Vila, on Rekata Bay in Santa Isobel Island, and on shipping to the northward of that island. That evening the Japanese attacked American shipping at Guadalcanal with 50 bombers escorted by 48 fighters. In this attack one American destroyer was damaged by bombs and sank later while being towed towards safety, and a corvette and a tanker were sunk. 39 of the Japanese aircraft were destroyed, 12 of them dive-bombers, 25 Zero fighters, and two unidentified. The Japanese version of these engagements claimed to have sunk one Allied cruiser, one destroyer and 10 transports, to have damaged several more transports and to have shot down 37 Allied aircraft. It admitted the loss of six Japanese aircraft only. Throughout the remainder of the month frequent Allied attacks were made on Japanese bases in the central and northern Solomons, Japanese warships or other shipping being attacked whenever located.

CENTRAL PACIFIC.

On April 21 American bombers attacked the Japanese in Nauru, the outlying island to the westward of the Gilberts. On April 23 an official announcement of a Japanese attack the day before disclosed that American forces were in occupation of the Ellice Islands, to the southward of the Gilbert group. It had generally been supposed that the Japanese were in possession of them.

ALEUTIAN ISLANDS.

The Japanese positions in Kiska and Attu were frequently bombed by American air forces throughout the month. On April 24 these attacks were supplemented by a bombardment, by United States men-of-war, of the Japanese positions at Holtz Bay and Chicagof Harbour in Attu, where the Japanese were building runways for aircraft. During the month one Japanese submarine was destroyed in the Aleutian Islands by a depth charge attack from a Catalina aircraft on patrol.

LOSSES.

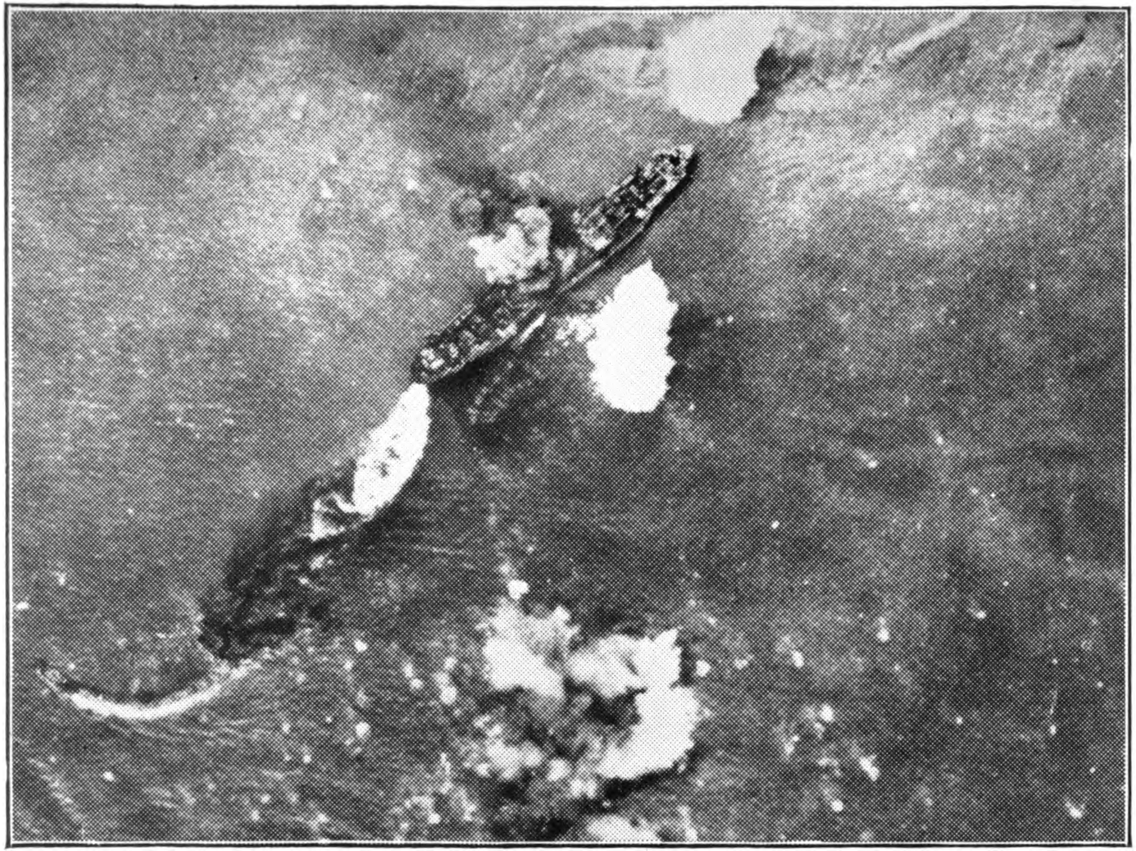
During the month the losses were announced of the destroyer Harvester, the submarines Tigress and Thunderbolt, the depot ship Medway and one trawler. The Medway was actually sunk during the landing in North Africa in November 1942 ; but the announcement of the loss was delayed because it was known that the enemy was ignorant of it and it was considered important to deny him knowledge of it until alternative arrangements had been made for the submarine flotilla based on that ship.

MAY.

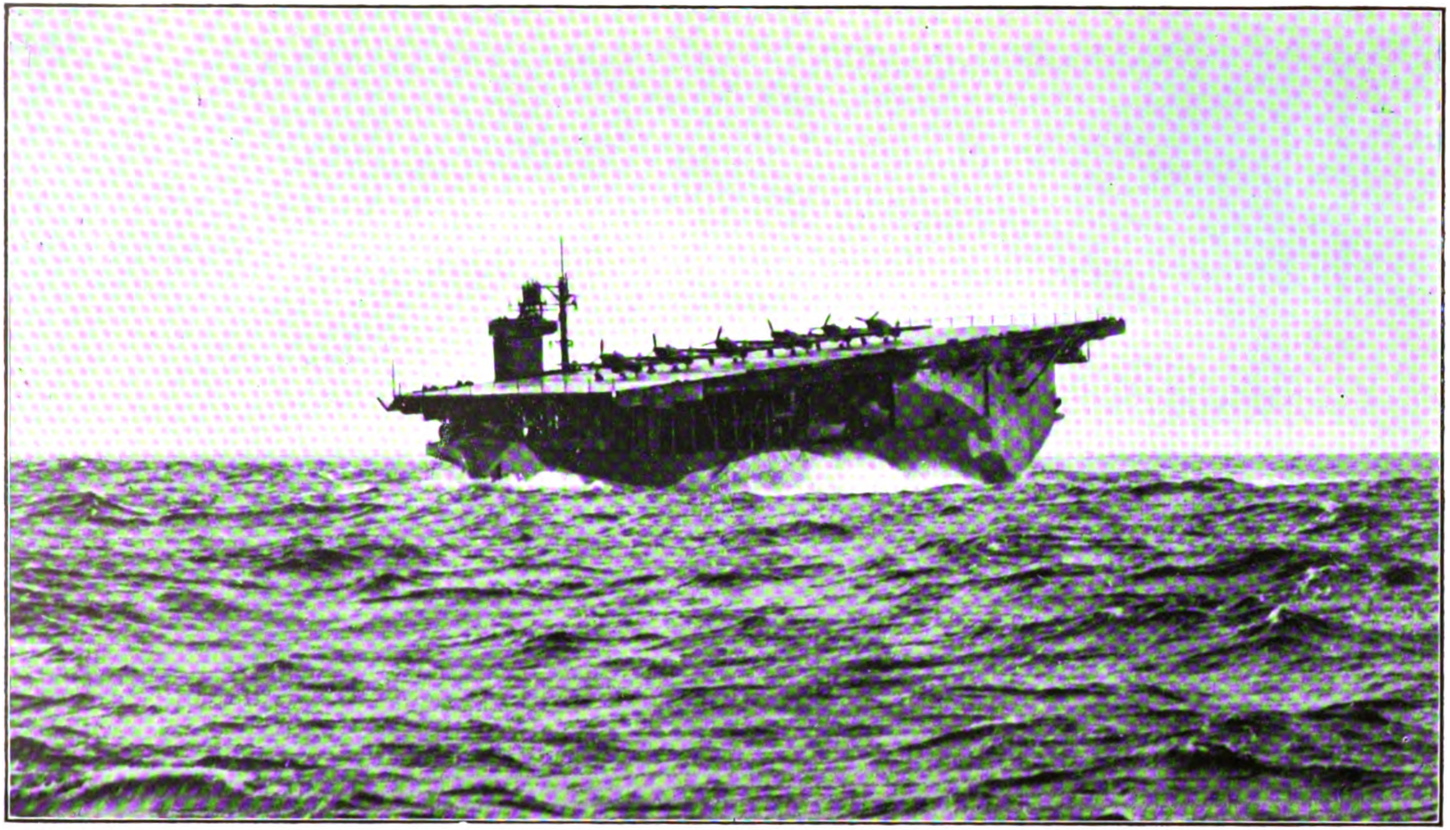
This month marked the turning-point of the U-boat war in the Atlantic. Escort carriers in substantial numbers had come into service during April, and these made great difference to the efficiency of the defence of convoys by providing air protection throughout the Atlantic crossing. At the same time the numbers of escort craft had grown steadily and certain new weapons—of which no details were made public, though their existence was disclosed by the Prime Minister—were brought into operation.

On May 1 new arrangements for the organisation of convoy protection in the Atlantic were announced. The British and Canadian Navies were in future to be responsible for the protection of the North Atlantic convoy routes. Certain American ships and aircraft would continue to be employed there, but they would operate as units of the British and Canadian forces respectively. A new naval station was created, the Canadian North-west Atlantic, of which Rear-Admiral R. L. Murray, R.C.N. was appointed Commander-in-Chief. A Canadian Eastern Air Command was also created under Air Vice-Marshall G. Johnson, the counterpart of the Coastal Command in the United Kingdom. The anti-U-boat operations of ships and aircraft were to be co-ordinated by the naval Commander-in-Chief, as on this side of the Atlantic. The authorities responsible for U-boat operations on the north-Atlantic convoy routes were therefore reduced to two, the Commander-in-Chief Western Approaches at this end and the Commander-in-Chief Canadian North-west Atlantic at the other.

On May 1 the Germans claimed the destruction of ten ships in an attack on an Allied convoy. What actually happened was very different. On the last days of April a pack of some eight U-boats made concentrated attacks, starting in mid-Atlantic, on a west-bound convoy. The convoy, however, was provided with a strong escort ; the official account of the battle which ensued mentioned by name no less than ten—2 destroyers, 2 frigates, 4 corvettes, a sloop and a cutter. Most of the attacks were successfully driven off, but the convoy appears to have suffered some losses at this stage. On May 1 a gale started to blow, which lasted for three days and prevented the U-boats from attacking ; but the interval was utilised by them to concentrate more boats for the attack. When it was resumed on May 4, 5 and 6 it was estimated that the escorts were in action with about 25 U-boats. The enemy made more than thirty attacks, and though the convoy was then within reach of the Royal Canadian Air Force, the weather was still too heavy for complete air cover to be given. Nevertheless, counter-attacks on the U-boats were continual and successful. Four U-boats were sunk for certain, two of them rammed by the destroyer Oribi and the corvette Sunflower respectively and the other two destroyed



Japanese Supply Ship hit by American bombs off Lae, New Guinea.



An Escort Carrier at sea. H.M.S. Biter with Hurricanes ranged.

(Official photograph. Crown copyright reserved.)

with depth charges by the corvette Snowflake and the destroyer Vidette respectively. No less than six others were reported as "probably destroyed," two of them being rated as "very probably." The official account closed with the words "The convoy suffered some damage, but the majority of the merchant men reached port in safety." The American account of this action stated that one of the U-boats that was destroyed was sunk by a new weapon, which was in use by the escort, the nature of which was a closely guarded secret.

Later in the month another battle, ranging over hundreds of miles and continuing throughout five days and five nights, was fought in defence of east-bound convoys. In these actions two U-boats were destroyed, three were probably destroyed, and a number of others were damaged, while 97 per cent. of the ships in convoy reached harbour in safety and without having been molested. Most of the engagements with U-boats were fought 15 miles or more away from the convoys, the attackers being prevented from even getting within sight of their prey.

Aircraft from the escort carrier H.M.S. Biter—which were the first to sight the enemy—together with those of the Coastal Command, gave continuous air protection throughout the actions; her aircraft actually sighted 12 U-boats in the course of the battle. This was the first occasion on which the name of an escort carrier was mentioned in a description of an action. The names of only five of the escort ships were mentioned in the announcement—three destroyers, one corvette and one frigate—but undoubtedly many more of them were engaged. The following excerpt from the official announcement illustrates how conservative are the estimates of results of attacks on U-boats.

> "One enemy submarine, sighted steering towards the convoy, was attacked with depth charges, forced to the surface and engaged with gunfire [by the destroyer Hesperus]. Repeated hits were scored and the U-boat's gun crew were blown into the sea. H.M.S. Hesperus closed the U-boat, which either dived or sank as the destroyer passed over her, dropping a final pattern of depth charges. The fate of this U-boat is uncertain."

The aircraft of H.M.S. Biter sighted altogether twelve U-boats in the course of the five days, mostly out of sight of the convoy, and were able to guide the escort ships in to the attack before the enemy could get any closer.

On May 31 the Air Ministry described how no less than five U-boats had been destroyed in the North Atlantic by aircraft of the Coastal Command in the space of ten days. Three of these had been sunk in the neighbourhood of Iceland, the other two in the approaches to the Bay of Biscay. In each case the U-boat was sighted on the surface, attacked with depth charges in the face of lively A.A. fire, and the destruction was confirmed by the sight of survivors swimming in the sea after the U-boat had disappeared. A number of other attacks were made during the month and the results of many of them appeared promising; but since there was no definite proof of destruction, it was only claimed that they had been damaged.

These were not the only successes although they were the only ones of which detailed descriptions were published. The First Lord of the Admiralty speaking in Parliament the following month stated that "from a provisional assessment it looks as if the number of U-boats destroyed in May will exceed the number which the enemy may probably have brought into service. Certainly May is the best month of the War for kills so far." That provisional assessment was in due course confirmed.

In a later statement, which will be recorded in its place, the average rate at which U-boats had been destroyed was stated at one a day throughout several months of which May was the first.

At the end of the month the German High Command claimed to have sunk 76 Allied merchant ships, 65 of them by U-boats, totalling in all 430,000 tons. Actually, though the losses were not announced in this country, Mr. Alexander in the speech already quoted stated that during April and May shipping losses had been reduced below the low level of the three months December to February.

Two would-be blockade runners were intercepted by British cruisers in the Atlantic during the month and both of them were scuttled by their crews on being overhauled. One of them, the German S.S. Silvaplana, 4,793 tons, was overhauled by H.M.S. Adventure, 200 miles west of Cape Finisterre. When ordered to stop engines, her company set her on fire and abandoned ship before she had even lost way; she was rapidly enveloped in flames and sank after a series of internal explosions. All her company, including over 100 men belonging to the German Navy returning from the Far East, were picked up by the Adventure. The other was the German motor-vessel Regensburg, 8,000 tons, which was intercepted in the Denmark Strait, between Greenland and Iceland, by H.M.S. Glasgow. When the Glasgow fired warning shots as an order to her to stop there was at once a panic on board, and a number of her company were seen to jump into the sea. The Glasgow ceased fire as soon as the Regensburg stopped, but the German ship had been already scuttled by her company who abandoned ship in boats and rafts. Owing to the heavy weather and the icy sea, the Glasgow was able to rescue only six out of her company.

Of U-boat bases, Emden was bombed by the R.A.F. on May 17, Kiel on May 14 and 20, Lorient, Bordeaux and Cherbourg on May 18, La Pallice and St. Nazaire on May 31.

HOME WATERS.

During the month, a task force of the United States Navy, commanded by Rear-Admiral Hustvedt, joined up for a time with the Home Fleet. Its full composition was not made known, but it certainly comprised battleships and destroyers. The fleet made at least one cruise between Norway and Bear Island during its stay, but the German battleships Tirpitz and Scharnhorst were not to be tempted to sea.

Light forces continued to be active in narrow seas. On May 1 a flotilla commanded by Lieutenant-Commander Duff-Still, R.N.V.R., engaged four heavily-armed German patrol craft at close quarters off Terschelling, sinking one enemy craft and leaving two others burning fiercely. There were a few British casualties. A fortnight's bad weather then held up operations, but on May 13 a flotilla commanded by Lieutenant Dickens fought a similar action off the Dutch coast, in which two enemy 600-ton torpedo boats were torpedoed and sunk; there were no British casualties or damage. On May 23 eight E-boats were attacked 30 miles off the Isle of Wight by naval aircraft and three of them were sunk. On May 28 a patrol under Lieutenant Berthon, R.N.V.R., engaged four heavily-armed German trawlers near Terschelling. Three of them were driven off and the fourth was left burning and sinking by the stern. There was one British casualty. On the night of May 28–29 naval aircraft sank six R-boats and damaged others off Cherbourg, while later on a coastal flotilla under the command of Lieutenant Richards, R.N. attacked a group of enemy armed trawlers, which was later joined by a number of E-boats, off Dunkirk. The action lasted for three-quarters of an hour and four of the enemy were set on fire, two of them being certainly sunk. Of the E-boats which then attacked two were set on fire and all were driven off; when last seen they were firing at one another. The Senior Officer's gun-boat was lost in this action; the remainder suffered only minor damage with three men wounded.

The operations of coastal forces by night were reinforced by air action during the day. Convoys and enemy patrol craft were attacked off the French and Dutch coasts on many days during the month. On May 1 an attack was reported on an enemy minelayer of about 1,000 tons off Ushant.

MEDITERRANEAN.

The campaign in Tunisia came to an end during the month with the capture on May 12 of General von Arnim, the Axis Commander-in-Chief, after Tunis and Bizerta had both been occupied on May 7. Throughout the last few days of the campaign small parties of Axis troops tried to get away from the Cape Bon peninsula in fishing boats or any small craft that they could seize. Few, if any of them, succeeded, though it is possible that some boats may have got through to Pantellaria. At the same time the Axis authorities on the mainland, perhaps not realising the extremities to which their forces in Africa were reduced, continued their attempts to keep them supplied. On May 3 a large merchant ship, escorted by a torpedo boat of the Cassiopea class, loaded with ammunition and mechanical transport from Naples, was encountered east of Cape Bon by British light forces—presumably destroyers. Both Italian ships were sunk and a few survivors picked up, without any British damage or casualties.

Even after the fall of the two ports of Bizerta and Tunis enemy merchant ships still tried to bring succour to the Axis armies, or to assist survivors of them to escape. The coast, however, was so closely blockaded by the Mediterranean Fleet that their success was small. Two enemy merchant ships were sunk on the morning of May 9 off the Cape Bon peninsula and a number of small craft were rounded up and captured, including on May 10 one carrying a German General, Chief-of-Staff of the Fifth Panzer Division. Altogether more than nine hundred prisoners were taken at sea in the final stages of the Tunisian campaign. Only 638 persons in all succeeded in getting away, most of them by air.

On May 23 the Admiralty issued a summary of the results achieved at sea since the opening of the North African campaign with the battle of El Alamein in October 1942. The Mediterranean Fleet in that period had sunk or seriously damaged 56 warships and 257 supply ships. In addition to that, from evidence which became available afterwards it was estimated that between 30 and 40 enemy ships, of all categories, had been sunk or severely damaged by British mines. Of the 313 successful attacks, 228 were made by H.M. submarines, 56 by surface ships and 29 by the aircraft of the Fleet Air Arm. Of the 318 enemy ships attacked 185 were seen to sink, and of the remainder a great many were so severely damaged that it is almost certain that they cannot have been saved. Neither submarines nor aircraft, however, can always observe the final result of their attacks; and consequently, the latter were not claimed as definitely sunk, but only as having been damaged.

In the later stages of the Tunisian campaign the island of Pantellaria was kept under continual air attack in order to deny the use of its airfield to the enemy. With the fall of Tunisia the attacks on Pantellaria were intensified, as a preliminary to its reduction later on, and it was also bombarded from time to time by ships of the Mediterranean fleet. Air forces were also switched from Tunisian targets to more intense attacks on Italian bases in Sardinia, Sicily and Italy itself, and to any Italian shipping by which the enemy was endeavouring to keep his outlying garrisons supplied. The Eastern Mediterranean was not neglected and attacks were made from time to time on airfields in Crete, on the Dodecanese, and on Axis supply ships moving in that theatre.

British submarines continued to do much damage to enemy shipping, inshore communications, and coastal railways. One submarine penetrated the harbour of Porto Torres, in the Gulf of Asinara in northern Sardinia, and destroyed two supply ships alongside the pier. Another torpedoed and sank an Italian destroyer off the north coast of Sicily and also torpedoed a large supply ship near Palermo which was being escorted by a strong destroyer flotilla. With the elimination of the Axis forces from North Africa, however, the volume of Axis sea traffic in the Mediterranean was greatly reduced, so that the targets available to the British submarines became much fewer. On May 29 it was announced that the Greek submarine Papanicolis had sunk by gunfire in the Ægean two small supply ships, flying German colours and carrying supplies for German garrisons in the islands, and had picked up survivors.

NEW GUINEA.

Throughout most of the month cross air raids on ports were the only activity at sea. Japanese ships in Madang were attacked by Allied aircraft on May 8, and a large transport crowded with troops was first set on fire by cannon fire and then sunk by three 500-pound bombs dropped from mast height. A cargo ship was also hit with two bombs and left burning and sinking. Rabaul was attacked more than once and Douglas Harbour, near Cape Ward Hunt, was attacked on May 20, a number of small craft being damaged or set on fire. On May 28 a Japanese convoy of four transports with an escort of two warships was located off Hansa Bay, midway between Madang and Wewak, and attacked by bombers. Bad weather prevented decisive results and it was considered probable that it reached its destination at Wewak, which was in process of being built up into one of the strongest Japanese positions in the area.

On May 14, the Australian hospital ship Centaur was torpedoed at 4.10 a.m. while steaming northwards, fully illuminated, 40 miles east of Brisbane. Of her company of 352 only 64 were rescued, a number which included one medical officer out of 19, one nurse out of twelve, 32 medical personnel and 30 of the ship's crew.

SOLOMONS.

On May 4 the announcement was made that the Russell Islands—a small group lying only 20 miles north-west of Guadalcanal—were in American occupation. They had been taken without opposition in February, some time after Japanese resistance had ceased in Guadalcanal itself. On May 8 a number of Japanese destroyers were located near the New Georgia group and were attacked by American dive-bombers, presumably working from Guadalcanal. They reported hitting one destroyer with a 1,000-pound bomb ; the official result of the attack was not reported. On May 13 an air battle took place in the vicinity of the Russell Islands when American fighters engaged about 25 Japanese Zeros : 16 Zeros were shot down and two others reported probably destroyed for a loss of five American aircraft, two of the pilots of which were saved.

CENTRAL PACIFIC.

American submarines during the month sank a number of Japanese ships in various areas, not specified in the official announcement. On May 4 the Navy Department announced that two destroyers, two supply ships and a transport had been sunk by them and another large transport damaged. On May 10 a Tokio broadcast stated that an Allied submarine had shelled a village on the south-east coast of Hokkaido, one of the main islands of Japan. On May 17 the sinking of one destroyer, four supply ships or transports and a small escort vessel and damage to one large tanker was announced.

ALEUTIAN ISLANDS.

On May 7 it was announced from Washington that the island of the Andreanoff group, of which the occupation had been announced in October 1942, was Adak ; and also that Amchitka, in the Rat Islands, the group of which Kiska is one, had been in American occupation since January. The occupation of both these islands had been unopposed by the enemy, the greatest difficulty to be faced having been the weather, which caused many casualties to landing craft at the first landing and interfered with the subsequent landing of supplies for the garrison there. Airfields were rapidly constructed on both these islands, from which the attack of the Japanese positions in the Aleutians was carried on. Kiska was bombed heavily and continuously on every day that the weather would allow.

On May 11 United States forces landed in the island of Attu, the westernmost of the group, at two places on the north and south sides of the peninsula which forms the eastern end of the island. It was at the former, Holtz Bay, that the Japanese were in the process of constructing a runway for the use of bombers. The American forces made steady progress ashore and by the end of the month the Japanese garrisons in the island were wiped out. On May 31 it was announced that organised resistance had ceased and a few days later the number of Japanese killed in the island was announced at 1,791, while 11 prisoners had been taken. American casualties were 342 killed, 1,135 wounded, and 58 missing. In the course of the operations the troops on shore were supported by fire from warships. On May 24 a Tokio broadcast asserted that Japanese naval aircraft had attacked American warships off Attu and had sunk a destroyer, hit another with several bombs and set it on fire and had seriously damaged a cruiser. There was no truth in the claim that American ships had been sunk, but it seems probable that some damage may have been sustained from air attack in the course of the three weeks operations. The recovery of Attu, with the runway just constructed by the Japanese, enabled the attack on the main Japanese position in Kiska to be intensified.

LOSSES.

During the month loss was announced of the destroyers Beverley and Pakenham and the submarines Turbulent, Sahib, Splendid and Regent.

JUNE.

Mr. Churchill, speaking of the U-boat war at the Guildhall on June 30, said, " We have had in June the best month from every point of view we have ever known in the whole 46 months of the war. . . . Since the middle of May scarcely a single merchant ship has been sunk in the north Atlantic ; and in June also, although the convoys are not being seriously attacked at the present time the U-boat losses, which should certainly not be exaggerated, have been most solid and encouraging." Later, when an official announcement was issued on the joint authority of Mr. Churchill and Mr. Roosevelt giving the results of the U-boat war during the month, it was stated that the losses of Allied and neutral merchant ships from all forms of enemy action were the lowest recorded since the beginning of the war. It was also stated that, as a result apparently of the heavy toll taken of U-boats during May, the main trans-Atlantic convoys in June were practically unmolested. Nevertheless, every opportunity was taken of attacking U-boats on passage to and from their bases on the Atlantic coast of France. The rate of destruction of U-boats was still maintained at or about the level of one a day.

The enemy did his best to provide the U-boats with air reconnaissance and cover during their passages in and out from their bases in the Bay of Biscay, by employing flying-boats for that purpose. Two of these—Blohm and Voss 222's—were shot down at sea by Mosquitos on June 20, and three others were damaged at their base, the lake of Biscarrosse, 80 miles south of the mouth of the Gironde, about the same time.

On June 27 a description was issued by the Air Ministry of the destruction of a U-boat in the Bay of Biscay by a Halifax of the Coastal Command. The U-boat was steaming fast on the surface through rough seas which were breaking occasionally right over the coning-tower. For this reason, perhaps, there appeared to be nobody keeping a look-out on deck and the approach of the aircraft was unobserved. The bomber passed low over the U-boat and dropped depth charges which exploded in contact. Turning about a mile beyond in order to make a second attack the pilot saw the bow of the U-boat sticking vertically out of the water, indicating that she had been holed and was flooded aft. The U-boat slowly sank, still in vertical position. At the end of the month the *Borsen Zeitung* published an article by Lieutenant-Commander Rudolph Krohne admitting that sinkings by U-boats during the month had been very few and making excuses for this disappointing result. It would appear that the U-boats, disturbed by their heavy losses during May, avoided the main convoy routes, assuming presumably that there the defence would be most highly developed, and sought their victims in widely dispersed areas elsewhere in the Atlantic. Evidently they did not find them ; but equally evidently they did not thereby avoid losses just as heavy as before, chiefly inflicted on their passage from and to their French bases.

Bombing of U-boat building ports and of their operating bases continued at intervals through the month. Kiel and Bremen were bombed on June 14 and St. Nazaire on June 30.

HOME WATERS.

The weather in June proved to be unfavourable for the operations of the Coastal Forces, so that very few encounters were reported in the narrow seas in the course of the month. There was a brief and indeterminate encounter in the Channel on June 7, but if there were any other brushes, they were so barren of result that they were not made the subject of any announcement. The Prime Minister, however, realising that inactivity during a month which usually provides many activities may well have been discouraging to the enthusiasm of the officers and men in the Coastal Forces, took the opportunity to issue the following message to them.

> **" I have noted with admiration the work of the light coastal forces in the North Sea, in the Channel, and more recently in the Mediterranean. Both in offence and in defence, the fighting zeal and the professional skill of officers and men have maintained the great tradition built up by many generations of British seamen. As our strategy becomes more strongly offensive, the task allotted to the coastal forces will increase in importance, and the area of their operations will widen. I wish to express my heartfelt congratulations to you all on what you have done in the past, and complete confidence that you will maintain the same high standards until complete victory has been gained over all our enemies."**

The offensive against enemy coastal traffic and patrols in narrow seas, however, was kept up by air forces, both of the R.A.F. and of those squadrons of the Fleet Air Arm which were working with them. On June 6, Whirlwind bombers together with fighters attacked a flotilla of enemy minesweepers in the Dover Strait, set two of them on fire and damaged four others without loss to themselves. On June 13 Coastal Command Beaufighters attacked a strongly escorted convoy off the Dutch coast, sank one supply ship in it, hit another larger one with several torpedoes, and damaged four of the escort. A similar action took place on June 22, in which four of the escort craft were sunk and a supply ship was reported probably sunk. On June 28 even more successful results were obtained. The official announcement by the Air Ministry stated that two enemy ships were sunk and several others damaged in a convoy off the Dutch coast. The Air Ministry News Service amplified this by reporting the convoy originally consisted of five coasters ; besides the two that were sunk in the first attack, a third had to be beached to save her from sinking and tugs had to be sent out to assist the last two. Both the tugs and the surviving coasters were set on fire in a second attack.

MEDITERRANEAN.

The interest at the beginning of the month was centred on Pantellaria. It was bombed heavily daily by the R.A.F., and the harbour and fortifications were bombarded from the sea on June 3 and following days, the last bombardment being on the morning of June 11. By that time a greater weight of bombs had been dropped on the 30 square miles of the island in the preceeding 13 days than on any other target of similar size. After the morning's bombardment a white flag was displayed in a conspicuous place and British troops then landed and took possession of the island. The first troops to land found that although great devastation had been done by the battering that the harbour and fortifications had received, they would have had an exceedingly difficult task to get ashore if the garrison, whose casualties had not been numerous, had made any serious attempt to oppose their landing, As it was, their total casualties were two wounded ; 15,000 Italian prisoners were taken. It was clear that an important factor in inducing surrender had been the blockade of the island by sea, which had prevented any supplies at all reaching the garrison for a month past. It would almost seem as if the moral effect of the bombardment as a preparation for landing from the sea was greater than the material effect. Pantellaria possessed a well-constructed airfield, in connection with which there were a number of underground hangars, capable of accommodating fighter aircraft. This was of the greatest value, fighter cover in the forthcoming invasion of Sicily needed a greater accommodation than the airfields of Malta and Northern Tunisia could provide.

The occupation of Pantellaria was quickly followed by that of the other small islands in the Sicilian Channel, Linosa and Lampedusa, which surrendered after brief bombardments on June 13. Thereupon the full weight of the heavy bombers was switched to Sicily and Sardinia, with frequent raids on the ports in Italy whence the enemy was accustomed to ship supplies to the islands. The chief of these was Naples, but occasional attacks were made on other ports further north, as far as Spezia. After the fall of the Italian islands in the Sicilian Channel, Mr. Churchill sent the following message to Admiral of the Fleet Sir Andrew Cunningham the Commander-in-Chief, Mediterranean.

> "I wish to send you my congratulations upon the admirable work done by the Navy during the whole of the Tunisian campaign, and particularly at its conclusion. The daring and devotion of our submarines succeeded in sinking 47 ships, and the surface forces 42 ships, of an aggregate tonnage of 268,600. When to this is added the sinkings by air, a grand total of 137 ships and 433,400 tons is reached. This was 32 per cent. of the estimated shipping initially available to the Axis at the beginning of the Tunisian campaign.
>
> During the long struggle on the mainland the Navy and the Air Force, working in the closest co-operation, sank 21 enemy destroyers or torpedo-boats and many small craft, and prevented 35 per cent. of the enemy supply ships and transports from reaching Tunisia.
>
> To the minesweepers fell the honour of re-opening the Mediterranean by clearing the channels, 600 miles long, between May 9 and 21.
>
> The protection of our own convoys was carried to the very highest point. Over the whole vast mass of shipping which entered the Mediterranean between November 8, 1942 and May 8, 1943, the losses were less than 2¼ per cent. The motor torpedo-boats showed the highest enterprise on all their operations, which developed increasingly from March to May, and during the first fortnight of May they sank nine ships with the loss of four.
>
> The destroyers of the Royal Navy, with M.T.B.s and cruiser support, made a close blockade around the Tunisian tip in the final phase through which practically nothing was able to pass, and all prospect of a Dunkirk was denied to the enemy. All this could not have been accomplished without the support of the battleships, aircraft-carriers, and cruisers, who were denied the meeting with the Italian battle fleet they so ardently desire.
>
> "I am very glad to put these facts, which impressed themselves upon me during my visit, on record, and I request you to offer my thanks and compliments to all officers and men of the naval forces under your cammand for the notable contribution they have made to the memorable African victory."

On the night of June 1, a small force of destroyers of which one belonged to the Royal Hellenic Navy, encountered an enemy convoy off Cape Spartivento, at the toe of Italy, and at once engaged. One destroyer of the escort was set on fire and driven ashore; one torpedo boat was sunk. Of the convoy itself, one merchant ship, which was set on fire, blew up and another was sunk. There were no casualties or damage to the Allied ships. Continuous patrols were also kept up in the Ægean and round Crete, the airfields in that island being bombed from time to time.

Further successes by H.M. submarines were announced on June 24. A 7,000-ton armed merchant cruiser, two naval auxiliaries, two medium-sized supply ships and eight smaller supply ships had been sunk in the preceeding few weeks. A destroyer of the Orsa class was hit by a torpedo north of Sicily; three large tankers, one small and two large supply ships were hit by torpedoes, though it was not possible to observe whether they actually sank. One of the large tankers, however, was hit by three torpedoes so it is unlikely that she could have survived.

On June 11 the appointment was announced of Vice-Admiral Sir John Cunningham—no relation to his more famous namesake—to be Commander-in-Chief, Levant, in succession to Vice-Admiral Sir Ralph Leatham who had taken over the station temporarily when Sir Henry Harwood had been incapacitated by illness.

On June 24 it was announced that the small island of Castel Rosso, off the Turkish coast, had been evacuated by its Italian garrison.

SOUTH-WEST PACIFIC

Very little happened at sea in the New Guinea area during the month beyond bomb attacks on enemy-held positions in New Guinea and New Britain, in the course of which a Japanese convoy bound for Rabaul was bombed on June 8; but at the end of the month Allied landings were made at Nassau Bay in the Huon Gulf eleven miles south of Salamaua, and in the Trobriand and Woodlark Islands, just north of the south-eastern tip of New Guinea. None of these three landings were opposed by the Japanese, who appear to have been taken by surprise. At Nassau Bay, however, the Allies encountered opposition after penetrating a short distance island; but they were able nevertheless to establish themselves firmly. In the Trobriand and Woodlark Islands, which had never been in Japanese occupation, the Allies at once set about constructing airfields in order to facilitate their further operations to the north and the north-east. Kiriwina, the principal island of the Trobriands, is only 150 miles south of New Britain and little more than 300 miles from the northern and central Solomons, so that it is well placed for the provision of fighter support in those areas.

In the Solomons on June 5, American dive-bombers sank a Japanese destroyer near Bougainville and set on fire a corvette and the supply ship that both the warships were escorting. The Japanese airfields at Munda and Vila in the New Georgia group were bombed many times during the month. Several big air battles took place in this area; on June 12 American fighters intercepted between 40 and 50 Japanese Zero fighters and shot down half of them for a loss of only 6 American planes, of which all the pilots except two were saved. On June 16 the Japanese attempted to attack American positions in Guadalcanal; American fighters shot down 32 Japanese bombers and 45 Zeros—77 aircraft in all—again at a cost of only six American planes. One U.S. merchant ship and one landing barge were damaged; the Japanese claim was that they had sunk 7 transports and a destroyer and had destroyed 32 U.S. aircraft for the loss of only 29 of their own. On June 20 U.S. Marines landed unobserved on New Georgia Island, the principal island of the group of that name, and working round, still unobserved, a week later captured Viru Harbour, exterminating the Japanese garrison there. On June 29 more U.S. Marines landed on Rendova Island and quickly took possession of it; the importance of this island was that from it artillery fire could be brought to bear on the Japanese airfield at Munda. The stage was thus set for the complete occupation of the New Georgia group, thus working northward through the Solomons towards the chief Japanese positions in Bougainville at the north.

CENTRAL PACIFIC.

There was much activity by American submarines throughout the Pacific during the month. On June 12 the Navy Department announced the loss of the Amberjack and Grampus. Two days later it was announced that another American submarine had recently sunk in Japanese waters one Japanese destroyer, one large transport, five medium-sized cargo ships, three small cargo ships and two patrol craft, besides damaging a destroyer and a number of other ships. Two days later Colonel Knox mentioned that American submarines had already "destroyed or damaged" 257 ships—following the example of Mr. Alexander in adopting this rather unsatisfactory combination of categories—and he mentioned that the United States had had 111 submarines in service at the beginning of the war, with 73 building. On June 28 the Navy Department reported further sinkings by American submarines of one Japanese destroyer, one minelayer, one large transport, three medium-sized supply ships and two small ships besides others damaged.

On June 18 American aircraft from the Solomons bombed Japanese positions at Tarawa, in the British Gilbert Islands, which had been seized by the Japanese the day after the Pearl Harbour attack.

ALEUTIAN ISLANDS.

Japanese positions in Kiska were attacked heavily from the air on 7 days during the month—presumably the only days on which weather allowed air action—on some days as many as 6 or more attacks during the day. On June 18 it was announced that, when mopping up in the island of Attu was completed, the total number of prisoners taken had amounted to 24 out of a total Japanese force in the island estimated at some 3,000.

LOSSES.

No losses of H.M. ships were announced during the month.

JULY.

Successes against U-boats of the last two months continued on the same scale during July. Admiral Lutzow, the German Naval commentator, in a broadcast on July 7, gave an account of the development of the U-boat war which was on the whole very accurate. He explained to his hearers, however, since 1942 the task of the U-boats had been rendered increasingly difficult by the progressive multiplication of defensive forces provided by the Allies for their convoys—increased number of escort ships, of shore-based aircraft, and later the provision of escort carriers. "The battle our U-boats have to wage has become very hard," he said; "enemy air and naval craft force the U-boat to dive, thus delaying it. If it stays on the surface it is shelled; if it goes under water it is bombed. In short, the enemy at present had the upper hand." The execution against U-boats was maintained throughout the month at the average level of a U-boat destroyed every day, i.e. over ninety in the three months May, June and July. Of these, 29 were destroyed by American forces, 24 by the U.S. Navy and 5 by U.S. Army aircraft; the remainder fell to British forces.

A number of battles against U-boats were described in official announcements during the month. On July 1 the Air Ministry described the destruction of one U-boat in the approaches to the Bay of Biscay by four Coastal Command aircraft. It was on the surface when sighted by the first of them, which was able to drop depth charges accurately, just before the conning tower disappeared below the surface, as the U-boat was attempting a crash-dive. The resulting damage made it necessary for the U-boat to abandon its intention to dive, so that the aircraft was able to make a second attack, after which the U-boat remained for a time stationary in a pool of oil and wreckage. Going ahead soon afterwards, the crew began to fire on the aircraft, though their fire was but weak and inaccurate. Three other aircraft, summoned to the attack, then arrived, and after further depth-charge attacks the U-boat sank, leaving her crew of from thirty to forty in the water. A second U-boat outward bound from France was attacked the same day in the vicinity and was reported probably destroyed.

Three days later a joint announcement by the Admiralty and Air Ministry described a two-day battle against a pack of U-boats in mid-Atlantic by convoy escorts which included the escort-carrier H.M.S. Archer, carrying Swordfish and Martlets. One U-boat was destroyed for certain and the announcement reported the probable destruction of a second and damage to several more. Close air cover was also provided at the beginning of the convoy's passage by the Canadian Eastern Air Command, and in the later stages by the Coastal Command. The battle began when a U-boat on the surface, moving towards the convoy, was sighted by one of the Archer's aircraft, attacked with depth charges and forced to dive, so that it was unable to get into attacking range. The next morning a submerged U-boat was attacked by another naval aircraft, many miles from the convoy, and was probably destroyed. There were several such incidents. Later, another naval aircraft attacked a U-boat on the surface 15 miles from the convoy and destroyed it, leaving its company in the sea to be picked up by H.M.S. Escapade. After this last incident the U-boats had had enough and the convoy was unmolested from then on. A similar action was described by an American announcement issued on July 16. Two convoys were involved, protected by an American escort carrier of which the name was not given; no ship in either convoy was damaged, while two U-boats were destroyed for certain, and ten others were reported as probably destroyed; 41 German prisoners were taken. On June 29 the Admiralty described the destruction of two U-boats within nine hours by the Second Escort Group, consisting of sloops Starling, Woodpecker, Wren, Wildgoose and Kite, under the command of Captain F. J. Walker.

At the end of the month the biggest of these battles was described—though it had taken place some weeks before—in which a force of between 25 and 30 U-boats was subjected to such unremitting attack by ships and aircraft that it was unable to make even one attack on a large and valuable convoy bound to the United Kingdom. All the actions took place 15 or more miles away from the convoy itself; only two U-boats were definitely destroyed, but a number of others were undoubtedly damaged. Even after the second certain "kill" it was estimated that there were still about 20 U-boats in contact with the convoy; but after five attacks on them by Coastal Command aircraft during the day, two more during the night by frigates of the escort, and similar actions during the following day and night, they gave up the contest and made no more attempts to attack.

Shipping losses during the month were again less than the number of U-boats sunk. The shipping position continued to improve and it was announced early in the month that during the first half of 1943 the new shipping completed by the Allies had exceeded all losses by more than 3,000,000 tons.

HOME WATERS.

The Coastal Forces of the Navy and the Coastal Command of the R.A.F. continued to be active in enemy waters during July. On July 1 a German convoy off the Hook of Holland was attacked by aircraft and three merchant ships and the four minesweepers which escorted them were all damaged. On July 4 torpedo aircraft of the Coastal Command destroyed a German merchant ship which had already been driven ashore on the coast of Norway by an earlier attack. On July 10 British light forces, with which were some of the Royal Norwegian Navy, engaged a force of three German torpedo boats, escorted by R-boats, in the mouth of the Channel about 45 miles north-east of Ushant. One torpedo boat and one R-boat were reported severely damaged, probably sunk, and the Germans later admitted the loss of one of them. All Allied ships returned to harbour having sustained a few casualties. A week later a patrol of British coastal forces under the command of Lieutenant D. G. Wright, R.N.V.R., attacked an enemy convoy off the Dutch coast by night, pressing the attack home to very close range. One of the enemy ships in convoy was considered probably sunk and two others were damaged. There were no British casualties or damage. On July 25 a patrol, commanded by Lieutenant Rooper, R.N., fought a sharp action with E-boats off Gravelines. One E-boat blew up and sank, the remainder disengaged and escaped. British ships picked up a number of German survivors and returned to harbour themselves without casualties or damage. On the night of July 24 one British force, commanded by Lieutenant Strang, R.N.V.R., attacked a strongly escorted enemy convoy off the Texel and torpedoed one ship in it. Another force under Lieutenant Marshall, R.N.V.R., engaged the escort and inflicted substantial damage on them. At one stage of the action some of the enemy were observed to be firing on their own ships. There were no British casualties. At the same time another force under Lieutenant Dickens, R.N., made a number of attacks on another German convoy off Ijmuiden in which it was believed that one ship in convoy had been torpedoed. There were some British casualties and damage, but the damage to the enemy was known to have been much greater. On July 26 a patrol under Lieutenant-Commander Peter Scott, R.N.V.R., attacked an enemy patrol close to Cherbourg and set two of them on fire. One of the British ships was hit and disabled, but she was successfully screened by smoke, taken in tow and brought away in spite of heavy fire from enemy shore batteries and an attempt by seven R-boats to cut her off.

Four German flying-boats were shot down into the North Sea on July 28, two by Naval aircraft and two by Beaufighters of the Coastal Command.

MEDITERRANEAN.

The great event of the month was the Allied landing in Sicily. It had been quite clear, ever since the final defeat and expulsion of the enemy from North Africa, that the next move would be an invasion of Axis-held Europe; the only question was—where was it going to take place? No special indication of preference for one place rather than another was given by the Allies; on the contrary a number of attacks which might have been precursors of the main invasion were made in various places.

A number of different beaches on the shores of Sicily were bombed from the air and bombarded from the sea at various times; the same was done in Crete and Greece. On July 4 a commando raid was made in Crete which was doubtless taken in that island for the beginning of the main invasion. Above all, however, the air-fields in Sicily were so heavily plastered with bombs by day and night that the enemy air force was unable to carry out any reconnaissance to discover what might be moving at sea, or in the ports across the Sicilian Channel. It would seem that the enemy was induced to believe that a landing was intended at the western end of Sicily, for on July 3 demolitions were observed taking place on the harbour of Trapani; but they were doubtless standing by all round the coast of Sicily every night of the early part of the month.

If so, it is probable that they relaxed their vigilance on the night of July 9, for the wind was blowing half a gale from the north-west in the Sicilian Channel so that there was a rough sea all along the south-western coast of Sicily, which coast-watchers would doubtless regard as making any landing on open beaches impossible. Indeed, it very nearly did, for instead of the wind dropping at sunset, as it nearly always does in the summer in the Mediterranean, it seemed to blow all the harder as the sun went down. But the landing had been planned for the early hours of the morning of July 10, and by the previous evening most of the craft were already under way bound for their respective landing places; the courageous decision was taken to adhere to the programme in spite of the weather. Courage was rewarded, for an hour and a half before zero hour the wind and sea dropped like magic, and although there was still considerable swell off the south-west coast, there is all the difference between a gently heaving swell and the vicious sea whipped up by a strong wind. Just before dawn the great Allied force—British, American and Canadian—landed at the south-eastern corner of Sicily, from just south of Syracuse all round to Licata.

It was carried in more than three thousand vessels, varying in size from large transports to small "L.C.A.s." They started from ports of origin, in General Eisenhower's words "scattered over half a world"; most of the small craft came from ports close by—Bizerta, Tunis, Sfax, Sousse and Tripoli. The number of transports came from farther away, Algiers, Gibraltar and Alexandria. Some ships even came direct from the United Kingdom and from across the Atlantic. But the conduct of the vast armada was faultless, for without a signal, without a light, without a wireless message, without a collision, the three thousand craft were brought each to its allotted position off the 100-mile stretch of coast accurately at the time arranged. The landing went on as if it were an exercise.

The whole conduct of the expedition afloat was under the command of Admiral of the Fleet Sir Andrew Cunningham. The British and Canadian half of the landing was under Admiral Sir Bertram Ramsey; the American part, to the westward of the British, was under Vice-Admiral Henry Hewitt, U.S.N. The covering force, of which the function was to provide against any attempt at interference by the Italian fleet, was under the command of Vice-Admiral Sir Algernon Willis. Its composition was not disclosed, but since the presence in the Mediterranean of the battleships Nelson, Rodney, Warspite and Valiant was reported not very long afterwards, it seems probable that they formed part of it.

There was practically no interference by the enemy air force, so effective had been the provision against it. One officer who was present stated that although during the day he visited every part of the coast on which British troops were landing, he never saw an enemy aircraft, although there were of course one or two in the air from time to time. Destroyers were thus able to lie close off the beaches and to knock out with their gunfire any pillboxes or enemy strong points, by which the troops were held up, as they disclosed their positions by firing on the first wave of attackers reaching the beach. Transports lay a little farther out, lowered the landing craft they carried and sent a continuous stream of troops to the shore. As soon as the beaches and approaches had been secured, the support landing craft in turn discharged their cargoes. Ships and landing craft, as they finished discharging their loads, moved away in accordance with a detailed time-table, thus leaving room for their successors. By 9 p.m. on July 10, Syracuse was in British hands, and its sheltered and convenient little harbour was at once taken into use for further landings, not only on the fine quay at its northern end, by the town, but also on the shelving beaches round its western and southern shores.

Two days later cruisers and monitors bombarded the defences of Port Augusta, a few miles farther to the north, the destroyer and submarine base of the Italian Navy. The same evening a British minesweeper entered the harbour to receive first the surrender of an Italian submarine which had failed to get out unobserved, and then of the port. Port Augusta thenceforward also became available as a base port, in which supplies and reinforcements for the Army could be landed. From that time onwards, as far as the British sphere was concerned, it ceased to be a combined operation in the full sense of the word, and naval collaboration settled down to the ordinary process of supporting the army which was advancing northwards with its flank resting upon the coast.

Air attacks were continuous on Messina and Reggio, through which all supplies must pass, since it may be taken for granted that nothing was allowed to pass by sea from the mainland across to Palermo. Motor gunboats moved up to the Messina Strait as soon as it was possible to base them on Augusta, and on July 15 an engagement between them and enemy small craft was reported in the Straits, in which one E-boat was sunk and two others were damaged. Catania, the chief city and port on the east coast of Sicily, was bombarded by a battleship on the night of July17, but it was not finally taken until the following month. Crotone, where there was an important airfield, was also bombarded by the warships on July 21 as well as being constantly bombed from the air. A number of actions between E-boats and British destroyers, as well as M.G.B.s, were fought during the last part of the month, in which a number of the former were destroyed.

While this main attack was in progress the usual activities continued throughout the rest of the Mediterranean. On July 1 a number of the exploits of British submarines were announced, a large transport and four supply ships were destroyed. On July 27 another announcement described submarines' activities, chiefly in the Ægean, where three supply ships, a tanker, and 19 small enemy ships were destroyed, the latter all by gunfire. At the same time a number of shore targets were successfully bombarded, the bauxite plant at Amorgos Island being one of the most important. They were also active in the Gulf of Genoa, where several supply ships were sunk by torpedo, and round the heel of Italy, where 17 small ships were sunk by gunfire.

INDIAN OCEAN.

There was some Japanese activity in the course of the month. It was reported from Australia on July 6 that survivors from a tanker, torpedoed by a Japanese submarine, had just reached an Australian port. On July 19 a small Japanese aircraft approached the east coast of Ceylon, for reconnaissance only apparently, since no attack was made. It seems probable that it came from one of the larger Japanese submarines.

NEW GUINEA.

There was little activity at sea in this theatre until towards the end of the month. After the landing at Nassau Bay, 11 miles south of Salamaua, on June 30, the advance was continued on land, with practically no operations going on afloat. On July 28, however, a Japanese transport and two destroyers were reported by air reconnaissance off Cape Gloucester and attacked by bombers ; all three ships were hit. The smaller destroyer sank at once ; the other two, set on fire, had to be beached on a coral reef, where they were observed the next day to have been burnt out. At the same time American medium bombers lost no opportunity of attacking Japanese landing barges, both off New Britain and in the Huon Gulf, where a number were destroyed during the last week of the month. On July 29, 7 of them, loaded with supplies, were sunk in the Vitiaz Straits by American M.T.B.s. The next day four more were sunk and others damaged off Cape Gloucester by American Marauders, and on July 31 7 more in the same position, besides a number of others in the various harbours on the coast of New Guinea.

SOLOMONS.

The campaign for the recovery of the New Georgia group progressed briskly during the month, but at the end of it the enemy were still holding the airfield at Munda. On July 1 an announcement was issued in Washington describing the landing on Rendova Island the day before. The Japanese reacted violently to this move and heavily attacked the American forces from the air ; but the only result was that they lost 65 aircraft and only succeeded in destroying 17 American planes and sinking one transport, the U.S.S. McCauley, 7,712 tons. She was disabled by a Japanese torpedo aircraft after her troops had landed, and was later sunk by a Japanese submarine, though there was no loss of life. The Japanese broadcast magnified this minor success into the sinking or heavy damage of three American cruisers, a destroyer and six transports. By midday the Japanese garrison on Rendova had been annihilated, and two hours later artillery fire was brought to bear on the airfield at Munda from guns which had been landed, and the use of it was thus denied to the enemy. From then onwards the American forces, which had been landed on New Georgia island itself, continued their advance towards Munda and towards the other Japanese positions on the north-west coast of the island, fronting on the Kula Gulf, between it and the adjoining island of Kolombangara.

This American threat to the Japanese hold on the group induced Japanese efforts to reinforce their garrisons by sending fresh troops and supplies into the Kula Gulf. This led to a naval engagement in that gulf on the night of July 5. In that engagement one American cruiser, the U.S.S. Helena, was sunk though the most of her company were saved ; but the Japanese loss was undoubtedly much heavier, and though it could not be observed with accuracy in the darkness, it was estimated by Admiral Halsey as at least nine warships. Three or four of these were believed to have been light cruisers and the remainder destroyers—it is not easy to distinguish between those two classes of Japanese ships. A second night action took place in the Kula Gulf on July 12, in which the Japanese claimed to have sunk two American cruisers and set a third on fire. Actually the only American loss was the destroyer Gwin, while the Japanese losses were put at one light cruiser and three destroyers sunk, and two other destroyers probably sunk. A number of landing barges were also destroyed. On July 17 a very heavy American air attack was made on Japanese shipping in the anchorages at the south end of Bougainville island, in which a light cruiser, two destroyers, a corvette, and three merchant vessels were sunk and 49 Japanese aircraft were shot down for a loss of only 6 American aircraft. Two nights later the Japanese made another attempt to reinforce their beleaguered garrisons, passing this time not through the Kula Gulf but through the Vella Gulf to the northward of Kolombangara. They were attacked by air only, but the attackers reported sinking a light cruiser and three destroyers and damaging a transport and four more destroyers; the remainder of the convoy abandoned its attempt to reach the Japanese positions and retreated to the northward. As an offset to the losses they had sustained, the Japanese again claimed to have sunk an American cruiser on this night. That was the last engagement of the month, but on July 22 American bombers reported sinking a Japanese sea-plane tender north of Bougainville and damaging one of the four destroyers by which it was escorted.

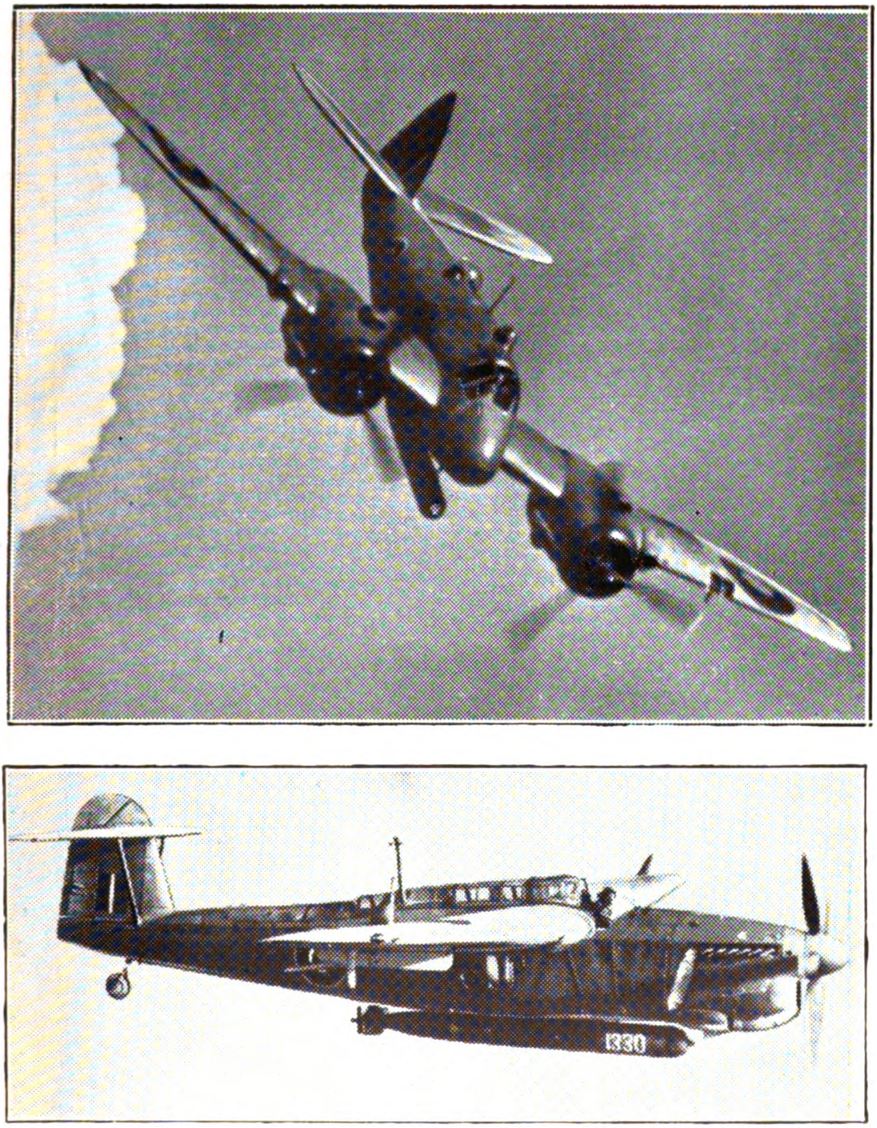
A number of Japanese submarines, including some midgets, were destroyed in the area during the month, some of them by sea and air forces from New Zealand.

CENTRAL PACIFIC.

On July 8 it was announced that American submarines had sunk two transports, five supply ships, two tankers and a small schooner, and had damaged four other supply ships. This brought the total of Japanese ships sunk by American submarines in the Far East up to 200. On July 29, Washington reported the following further results by American submarines: two transports, six supply ships and two tankers sunk with four other ships damaged. Air attacks were made on the Japanese garrison in Wake Island on July 26 and 27. On July 19 American Army bombers attacked the Japanese harbour of Paramushir in the Kurile Islands, damaging Japanese positions and hitting ships under way in the vicinity. Japanese bombers made two attacks on Allied Pacific islands, in the course of the month, on July 16 on Canton Island, between Fanning, and the Ellice Islands, and on July 20 on Funafuti in the Ellice group. Both raids were ineffective.

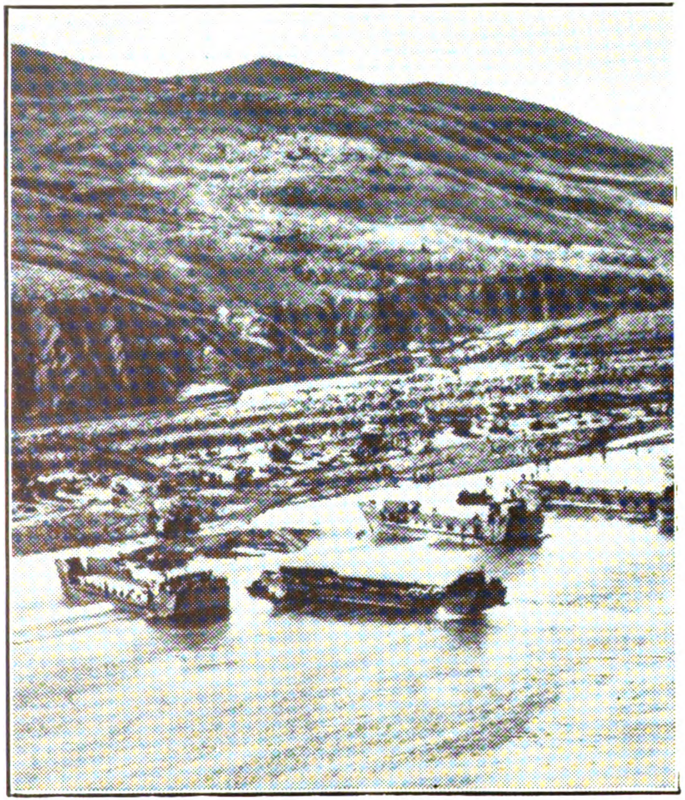
ALEUTIAN ISLANDS.

The Japanese positions in Kiska were bombed heavily on every occasion throughout the month that the weather permitted; but this was not very frequently, for the fogs this year were reported to be much worse even than usual. On July 22 the bombing was reinforced by bombardment from American warships, an operation which was repeated on July 30. The ships' fire was returned by the shore batteries on the first occasion but not on the second.

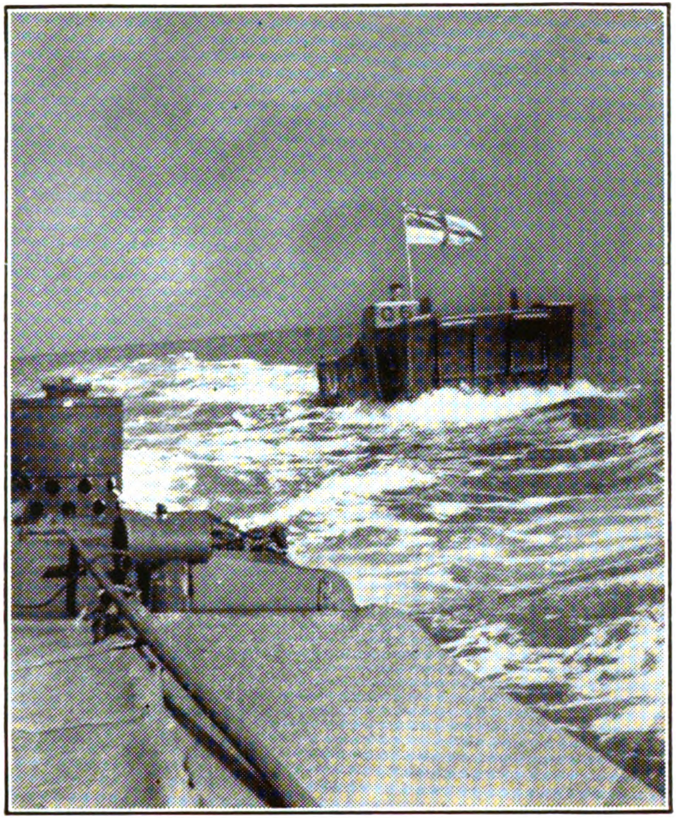


Torpedo-carrying aircraft.

Above : Beaufighter of R.A.F. Coastal Command.
Below : Barracuda of Fleet Air Arm.



U.S. troops landing at Kiska, Aleutian Islands.



L.C.A. at sea.

LOSSES.

During the month the loss was announced of the submarine P.615.

AUGUST.

August was another successful month in the war against the U-boats, although opportunities for attacking them were relatively few. There appeared to be fewer at sea than in earlier months, probably because they had been temporarily withdrawn while the German command was thinking out means for countering the very effective attack to which they had been subjected in the previous three months. They made practically no attempt during the month to attack North Atlantic convoys, and confined themselves to sporadic action elsewhere. The lessened effectiveness of the U-boats in face of the improved defence provided by the Allies was clearly recognised and openly admitted in Germany, for an article early in the month in the *Deutsche Allgemeine Zeitung* spoke of the possibility that the amount of shipping sunk by the U-boats would be still further reduced. The fact that all was not well with the U-boat service was indicated by a call made in the middle of the month for volunteers from boys of sixteen and seventeen for service in U-boats. One incident, which was probably rated in Germany as a notable success, was the sinking off the coast of South America of the S.S. Bage, the largest ship in the Brazilian merchant fleet. 41 passengers and 37 of the crew were drowned.

During the month, in one series of operations carried out in combination by ships of the Royal Navy and aircraft of the R.A.F. and the United States Army and Navy, seven U-boats were destroyed in the Bay of Biscay. The naval force engaged was the Second Escort Group of sloops, commanded by Captain F. J. Walker, R.N., in H.M.S. Kite, of whom much was heard later. It was during this series of operations, when his ships were at extreme visibility and range from an action that was proceeding between aircraft and U-boats still on the surface, that Captain Walker made to his ships the time-honoured signal " General Chase." Two aircraft were lost in these operations; the crew of one were all picked up, but there was only one survivor from the other. Two of the U-boats sunk were the large " supply " class.

HOME WATERS.

The offensive against enemy coastal convoys, carried on by aircraft during daylight and by coastal forces by night, continued in full swing throughout the month.

On August 2, Coastal Command Beaufighters attacked a south-bound convoy off the Dutch coast, sank one ship and damaged three of the escort. In the Bay of Biscay Beaufighters destroyed a Focke-Wulf 200 and set two armed trawlers on fire.

On August 3, a German supply ship was set on fire by cannon fire from Typhoons of the Fighter Command, and seven of the E-boats escorting it were damaged. They were again attacked by naval aircraft after dark with bombs, and at least one of them was hit. Before daylight the following morning a patrol, under the command of Lieutenant-Commander Probert, R.N.V.R., made a surprise attack on a group of German armed trawlers and continued the offensive at intervals for more than two hours. The enemy obviously did not know what was happening at first and fired indiscriminately in all directions; later their fire became a little more effective and one of the M.G.B.s was disabled before the enemy withdrew damaged, though there were no British casualties. The disabled boat lay stopped close to the enemy-occupied coast for several hours during the daylight before she was successfully taken in tow and brought home.

That evening naval aircraft, working under the Fighter Command of the R.A.F., attacked German E-boats off Calais, sank three of them without loss to themselves, and damaged two more. They made more than one run at their objective, returning to their airfield for more bombs when their first load had been expended.

On August 11, Whirlwind bombers, escorted by Polish Spitfires, made a surprise attack on six enemy ships near the Iles de Vierge, off the coast of Brittany, in which four E-boats were blown up, another was set on fire, and the sixth ship—either an E-boat or an armed trawler—was also blown up. The Germans were so little ready for an attack that their guns were still covered when it began.

The shipyard at Le Trait was bombed by the R.A.F. on August 4.

MEDITERRANEAN.

The land campaign for the conquest of Sicily continued during the first half of the month, concluding with the occupation of Messina on August 17. During that period naval activity was confined chiefly to operations in support of the Army's advance, with occasional bombardments of enemy vulnerable points on the coast of Italy itself. British naval forces operated off the east coast of Sicily and into the Messina Strait; American ships worked off the north coast, in support of American troops on the Allies' left flank.

British M.T.B.s had moved up to operate in the Messina Strait very soon after the start of the Sicilian campaign—as soon as a harbour was available as their base—with the object of harassing enemy communication by night between Sicily and the mainland. American P.T. boats performed the same duty north of the Straits, but in the Straits themselves, by daylight, it was confined to the R.A.F. So heavy, however, were the A.A. defences on the shores of the Straits, that it was hardly possible for our forces to ensure that enemy ships and boats should not cross by day. A number of eye-witnesses' accounts of the operation of M.T.B.s at night within the narrows appeared in the press in the course of the month.

Naval forces bombarded shore targets whenever opportunity offered. On August 1, cruisers and destroyers bombarded the harbour of Vibo Valentia Marina in the Gulf of St. Eufemia on the west coast of Calabria, and Crotone on the east coast, before dawn.

On August 7, cruisers and destroyers bombarded the coast road at Taormina, and the next night, the enemy positions between Acireale and Giarre Riposto. That same night, on the north coast, the Americans made a "leap-frog" landing behind the enemy lines near Terrenuove. The actual landing was unopposed, but contact with the enemy was made shortly afterwards, his positions were turned and 1,500 prisoners were taken.

On August 9, British cruisers and destroyers bombarded the Italian destroyer base at Castellamare di Stabia, in the Gulf of Naples, firing from the Salerno Gulf over the intervening peninsula of Sorrento. Other ships bombarded the coastal railway at Cape Vaticano in the Gulf of St. Eufemia.

On August 11, the Americans made another "leap-frog" landing on the north coast of Sicily, this time east of Cape Orlando. They encountered more opposition than before, but the operation was completely successful. It was repeated again for the third time in ten days, at Milazzo on August 16.

By this time it had become clear that the Germans were evacuating Sicily, thrusting aside any Italian forces that got in their way, and fighting rearguard actions only. Allied efforts to intercept the withdrawal to the mainland were redoubled; but the passage across the Messina Strait, on both sides of the narrows between Scylla and Charybdis was so short, and the enemy A.A. fire there was so intense, that it was not possible for the Allied air forces to stop the traffic. Sizeable ships could be, and were, attacked; two 7,000-ton ships in the Straits were hit by bombs on August 16. But the enemy was using a numerous flotilla of small craft, the stream of which by day across the Straits it was impossible altogether to prevent. Attempted attacks by E-boat flotillas on Allied ships were defeated on August 14 and 16.

On August 17, however, it was all over. Early that morning a British commando force landed eight miles south of Messina, and it was a race between the British 8th Army and the American 7th which should first reach and take possession of the city. They met each other in its streets in the course of the day, and the enemy retreat across the Straits was stopped.

Throughout the Sicilian campaign the British naval losses were: two submarines, three M.T.B.s and one M.G.B. Merchant shipping lost was just under 85,000 tons. British warships fired over 20,000 rounds, of calibre ranging from 4-inch to 15-inch, at land targets. Besides the British and American Navies, ships of the Dutch, Greek, Polish, Canadian and Indian Navies took part.

The Allied naval forces were then able to devote their attention to the bombardment of shore targets on the mainland—there were plenty of these, since the only roads and railways by which the Germans were retreating runs along the coast. On the night of August 18, a British force sank seven enemy landing craft off Scalea and the next night an American squadron bombarded enemy positions in the Gulf of Gioja. The Lipari Islands surrendered to the Americans—the German garrisons had left them—the same day that Messina fell.

On August 24 it was announced from Allied Force Headquarters that the French light cruisers—formerly known as " contre-torpilleurs "—Le Terrible and Le Fantasque, were operating with the Allied Mediterranean Fleets.

On August 24 a British squadron bombarded railway targets near Locri at night. Shore batteries replied without effect. The next day a British cruiser bombarded the Calabrian coast near the southern end of the Messina Strait.

On August 28 a cruiser and destroyer bombarded a battery near Cap Pellaro by day, without damage to themselves.

On August 31 the Nelson and Rodney also engaged shore batteries in that area with good effect.

Altogether, according to a statement made later by the First Lord of the Admiralty, ships of the British Mediterranean Fleet made more than fifty organised bombardments of shore targets in the course of the Sicilian campaign. One of the heaviest was made by the King George V and Howe against the island of Favignana, at the west end of Sicily, the same night that the cruisers Sirius and Dido shelled Marsala. The cruisers Orion, Uganda and Mauritius, with the destroyer Exmoor and the Greek destroyer

Kanaris, carried out a most successful bombardment of Augusta at the height of the battle for that town. The Sirius, Dido and Panther bombarded Scaletta in preparation for the commando landings at the rate of one round a second. Three monitors, the 25-year-old Erebus and the new ships Roberts and Abercrombie, did sterling work. On one occasion, when it was necessary to deny to the enemy as many landing grounds as possible, the Erebus approached Catania and put salvo after salvo from her 15-inch guns on to its airfield. The Abercrombie worked with the American Army and shelled the enemy at Agrigento and Empedocle. The Roberts, in support of the 8th Army, hindered the enemy's retreat by attacking the road at Taormina. The bombardments of the mainland were made by the cruisers Aurora, Penelope, Sirius, Dido and Euryalus. Amongst the destroyers that assisted were the Echo, Ilex, Quantock, Exmoor, Eclipse and Laforey, with the Greek destroyers Kanaris and Queen Olga. The gun-boats H.M.S. Aphis, Cockchafer and Gnat, and the Dutch ships Flores and Soemba, also did excellent service.

Elsewhere in the Mediterranean the normal activity continued. Since the expulsion of the Axis from North Africa, and the enemy's pre-occupation with the attacks that were being made on him, the through route had become almost normal for merchant shipping, though, of course, it had to be provided with air cover the whole way. The successful operations of British submarines were announced on August 17, enemy ships being sunk all round Italy as well as in the Ægean Sea.

On August 30 the German S.S. Thisbi, leaving Istanbul for the Black Sea, was torpedoed and sunk 10 miles outside Turkish waters, presumably by a Russian submarine.

INDIAN OCEAN.

The only incident reported from the Indian Ocean during the month was the sinking of a merchant ship by an enemy raider. No details were published except that the ship was attacked with gunfire, 1,000 miles from land, early one morning without warning. When all but one of the lifeboats had been smashed, the ship was then torpedoed ; 21 survivors succeeded in getting away in the one remaining boat, and in patching the holes made in it. Three died, and the remainder reached an Australian port 31 days later.

NEW GUINEA.

There was practically no sea activity in this area during the month, beyond the usual support of the advance of troops along the coast. The weight of air attack was transferred, from August 18 onwards, to Wewak, where it had been observed that the enemy was assembling bombers, evidently for the support of his now hard-pressed garrison at Salamaua. Great execution was done against Japanese aircraft on the ground.

SOLOMONS.

Munda was captured on August 6. By that time nearly 17,000 Japanese dead had been counted and the total number killed must have been many thousands. Isolated bodies of Japanese still held out in various positions in New Georgia, and the island of Kolombangara still remained in their hands. A Japanese attempt either to reinforce or withdraw their forces in Kolombangara and Vella Lavella, on either side of the Vella Gulf, led to yet another sea action in that gulf, this time on the night of August 6. A Japanese cruiser and two destroyers were sunk and a third destroyer was damaged so heavily that it was not thought it could have survived. The American force sustained no loss or casualties and it remained in the vicinity for some hours after the action, picking up survivors by the light of the flames from the sinking enemy cruiser. It was considered that Japanese casualties must have amounted to many thousands.

Vella Lavella was occupied by the Americans and New Zealanders on August 17, when 350 Japanese prisoners were taken. After the island fell Allied warships intercepted about thirty Japanese troop-carrying barges, escorted by destroyers, on their way to reinforce the Japanese garrison. In the engagement that ensued, two of the destroyers were severely damaged; they then retired to the northward, leaving the barges to their fate. No more than some 300 of the 2,200 Japanese troops they carried reached Vella Lavella; the remainder were either killed or captured. A number of Japanese landing barges were destroyed in the vicinity in the next fortnight.

On August 29 the last Japanese in New Georgia Island were liquidated, though some of them succeeded in getting across to Kolombangara, where they held out for some weeks longer. The same day American bombers attacked Japanese destroyers off Bougainville and reported hitting one of them with a 500-lb. bomb.

In the whole south-west Pacific area, including both New Guinea and the Solomons, over 500 Japanese landing barges were destroyed during August, and many more damaged; 584 Japanese aircraft were destroyed for a loss of 145 by the Allies.

NORTH PACIFIC.

Nine American heavy bombers attacked Paramushir, Shimusa, Kataoka and Kashiwabara, in the Kurile Islands, on August 12. The Japanese were taken completely by surprise. Five of the forty Japanese defending fighters were shot down for a loss of two American bombers.

ALEUTIAN ISLANDS.

Kiska was attacked by air on August 2. It was re-occupied by a joint American and Canadian force on August 15, after a prolonged period of bad weather had impeded reconnaissance, by which time the Japanese occupying force was found to have withdrawn. It was believed that the Japanese had employed their large submarines for the withdrawal, which must have been in progress for some time. The other islets of the Rat Islands were searched in the course of the next week, and no Japanese were found in them. The Japanese occupation of American territory in the Aleutians was at an end.

LOSSES.

During the month the loss was announced of the submarines Saracen and Parthian, and of one armed trawler.

SEPTEMBER.

The four months' lull in the intensity of U-boat attacks in the Atlantic continued for the first part of the month. So complete had it been that during the first fortnight of September no Allied merchant ship was sunk by a U-boat in any part of the world, and in the four months ended September 18, no merchant ship was sunk by enemy action in the North Atlantic. But it came to an end on September 19 with an assault by a pack of at least 15 U-boats on a west-bound convoy which lasted for four and a half days. The enemy account of this action, broadcast immediately afterwards, was that the U-boats had sunk twelve Allied destroyers of the convoy's escort, had damaged three more which they reported as probably sunk, and that nine ships in the convoy of a total of 48,500 tons were also destroyed. Actually only three ships of the escort were sunk, the destroyer H.M.C.S. St. Croix, the frigate H.M.S. Itchen and the corvette H.M.S. Polyanthus; according to a Canadian press report six ships of the convoy were sunk. The total number of U-boats sunk was not published definitely, but there is reason to believe that it was about seven, half the strength of the attacking pack. The St. Croix was disabled by one torpedo so that she became an easy mark for a second. Five officers and seventy-five men of her company were picked up by the Itchen; but when the Itchen herself was sunk later, only one man from the St. Croix, a stoker, survived.

It was in this action that the enemy was first observed to be using a new "secret weapon" in the shape of a target-seeking torpedo, actuated by an acoustic device designed to guide the torpedo into the propellers of the ship at which it was aimed. There is no great intrinsic difficulty in designing a device to achieve this, but it probably needs prolonged experimental work and development to bring it to the stage of being a practicable proposition. Even when perfected it could not do more than achieve a small increase in the accuracy of a torpedo. For the range at which it can be actuated by the vibrations of the target ship's propeller cannot be very great, and it is only the torpedo which passes within that range of the target than can be guided into it by the new device.

Only one further attack on an Allied convoy was reported during the month, so that it would appear that the enemy found the reception the U-boats received on their return to the fray to be highly discouraging. At the end of the month Hitler's headquarters issued a statement that during September the German Navy and the Luftwaffe had sunk one Allied battleship, three cruisers, twenty destroyers, and sixteen torpedo boats as well as a large number of minor craft, and had damaged one battleship, eighteen cruisers, seventeen destroyers, nine torpedo boats, fifteen landing craft and five other warships, besides having sunk and damaged an astronomical number of merchant ships. These figures were clearly invented solely for the purpose of bolstering up morale at home. Actually the two months August and September together were, from the point of view of merchant ship losses, the best record of the war.

In the endeavour to counter the attacks of British bombers on U-boats in the Bay of Biscay, approaching or leaving their bases, the enemy employed a number of Ju. 88's there. Eight of them were encountered there on September 25 by a force of four Mosquito fighters; two were shot down and several others severely damaged, for the loss of one Mosquito.

THE ARCTIC.

After nearly a year of quiescence—possibly the result of torpedo damage to the Tirpitz—the German surface ships in the advanced bases they had established in northern Norway, again began to display activity. At 1.45 a.m. on September 8 the Tirpitz, Scharnhorst and seven or eight destroyers, the latter carrying troops, appeared off Spitzbergen and steamed into Ice Fjord. Three destroyers entered Green Fjord and proceeded to attack the little settlement of Barentsburg, while the battleships and remaining destroyers lay off and supported the landing parties by their gunfire. The defences were of the weakest. A battery at Cape Heer, at the entrance to Green Fjord, was manned by no more than nine men, under an officer, and the other defence posts were on the same scale. Yet they resisted stoutly, firing on the German destroyers—and inflicting damage and casualties to the troops they carried—until forced to retire to the hills by the approach of another German landing party from their rear. A battery crew at Barentsburg held out for an hour before destroying their guns and making their retirement, in which they were helped by smoke from the coal heaps set on fire by the German shells.

Three destroyers which went right up Ice Fjord to attack Longyear in Advent Fjord were not fired on by the battery at the mouth of the latter, because they were flying British colours. But the tiny Norwegian garrisons everywhere put up a stout resistance, so skilfully that they lost no more than six killed and five taken prisoners. At 8.0 a.m. the Germans recalled their landing parties, but continued to bombard Sverdrup for another hour before they sailed away. The whole expedition was obviously in the nature of an exercise cruise, designed to give some war training to the crews of ships that had been lying in harbour for many months, at the expense of the Norwegian community in Spitzbergen.

Whether this intimation that the Tirpitz was ready to recommence activity was the signal for the British attack on her which quickly followed, or whether the midget submarines by which it was made had only just completed their preparations and training, will presumably not be known until after the war. On September 22 the Tirpitz was torpedoed, and severely damaged, inside the strong defences by which she was surrounded, by the two midget submarines, X.6 and X.7, commanded by Lieutenants Donald Cameron, R.N.R. and B. C. G. Place, R.N. This attack was one of the most remarkable of the whole war. Altenfjord is in Latitude 70° N. and is some 50 miles inland from the open sea. The only approaches to it are three narrow fjords, nowhere more than two miles wide, and all ten miles or more long, which were known to be vigilantly patrolled by the enemy and to be liberally provided with listening posts, nets and gun defences. The conditions in fact were ideal for the defence and the task of penetrating the defences undetected might well have been adjudged impossible. Added to that, it must be remembered that to reach Altenfjord from the nearest British port required a passage of over 1,000 miles; and the X-class submarines, to judge from photographs of them that have been published, can hardly be more than some 60 or 70 tons displacement.

X.6 and X.7 were not the only boats that took part in the exploit. The original Admiralty announcement stated that three of the midget submarines did not return from "this very gallant enterprise," the captain of the third being Lieutenant Henty-Creer, R.N.V.R. Its wording also seemed to indicate that there may have been even more than the three, the remainder having failed in their efforts to penetrate the defences and having returned to their base, since it stated that "personnel who took part in the operation report that, while still in the immediate vicinity of the anchorage, they heard a series of very heavy detonations at the time expected for units to be attacking."

It was many months before details of what had happened were ascertained. When they came through, Lieutenants Cameron and Place were awarded the Victoria Cross and other members of the boats' companies were also decorated. Whether the German vigilance was relaxed through over-confidence in the impregnability of the defences—as it may well have been—is not known; but undoubtedly they were taken completely by surprise. The first knowledge that they were being attacked came to the Tirpitz's company when they sighted the periscope of a submarine no more than 200 yards away, inside the close crinoline of anti-torpedo and anti-submarine nets, so close that they opened fire on it with small arms; but it immediately dipped again and a few seconds later there were tremendous explosions as the submarines' torpedoes hit. The enormous battleship was lifted several feet by them, settling back again in the water with a number of her fuel tanks laid open to the sea, as was clearly shown in a photograph taken from the air a day or two later, in which oil was seen to be pouring from the ship and spreading for two miles over the surface of the fjord. It does not appear that the damage was vital, as it would have been if the rudder or propellers had been hit by the torpedoes. But it was certainly severe enough to put the ship completely out of action for many months until the rents in the outer bottom could be repaired.

Though the attack had been a complete surprise to the Germans, there was, of course, no delay in getting a counter-attack under way. There was no possibility for the submarines of withdrawal or evasion from inside the pocket of nets surrounding the battleship. There was only one thing to do, and that was to scuttle the boats in order that they should not fall into the hands of the enemy, while making every possible provision for the safety of their company. That the captains of the boats did, and the official report states that the majority of the crews were taken prisoner. The citation in the Gazette announcing the award of Victoria Crosses concluded with the words "the courage, endurance, and utter contempt for danger in the immediate face of the enemy shown by Lieutenant Place and Cameron during this determined and successful attack were supreme."

HOME WATERS.

In the offensive against German coastal traffic, an E-boat was sunk off Boulogne Harbour on the night of September 2 by naval aircraft, operating under the Fighter Command. Two nights later, Lieutenant-Commander Peter Scott's patrol attacked a strong force of German minesweepers in the Channel, again and again for a space of over two hours. Towards the end of that period, the enemy was reinforced by "a formation of heavily-armed patrol vessels," but the only result of that was that one of the newcomers was torpedoed and sunk, another set on fire and others suffered more or less severe damage. British casualties were slight. Three nights later, in the early hours of September 8, a patrol under Lieutenant Rigg, R.N.V.R., made a surprise attack between Fécamp and St. Valery on a much stronger German force of three patrol boats and two armed trawlers. One of each was sunk by torpedo, and there were also other torpedo explosions of which the effect could not be observed. There were no British casualties or damage.

On the morning of September 14, two coasters and a barge were sunk off the Dutch coast, and 16 other craft were damaged, in wave-top attacks by Typhoon bombers, two of which were lost. After a pause of a week, the attack was taken up by the Coastal Forces, when a flotilla under Lieutenant-Commander Bradford, R.N.R., torpedoed and sank a large German supply ship which was provided with a strong escort. One escort craft was sunk, another set on fire ; British casualties were slight.

On September 25 the enemy made an attempt at retaliation, sending strong groups of E-boats just after midnight to attack British convoys off the east coast. Their approach was detected and they were intercepted, and engaged in a number of actions by armed trawlers, coastal forces, corvettes and destroyers. H.M. Trawler Franc Tireur was sunk by an E-boat's torpedo ; but two M.L.s commanded by Lieutenants Thomas and Seddon, R.N.V.R., intercepted the enemy flotilla as it retired, rammed one E-boat, set it on fire by gunfire, and picked up prisoners when it sank. Another group of E-boats was intercepted by the destroyer Pytchley and the corvette Puffin and several were hit by gunfire. Visibility was poor, however, and it was not possible to observe final results. British casualties were one officer and one rating slightly wounded ; the only damage was one M.L.'s bows damaged by ramming, and some gunfire damage in the other. In the afternoon of the same day, a German ship in convoy was torpedoed by Coastal Command Beaufighters off Den Helder. The next day it was the turn of the Dutch Navy. An M.T.B. patrol, commanded by Lieutenant Larive, R.N.N., supported by a British patrol under Lieutenant Rooper, R.N., intercepted a large, fully-laden supply ship off the French coast, and sank her with a torpedo, despite the strong escort, one of which was also believed to have been sunk. On the Allied side, there was one minor casualty in one of H.M. ships.

The next day, September 27, it was Lieutenant-Commander Peter Scott's turn again, for the second time in the month. His patrol surprised an enemy flotilla off the French coast north of Le Havre, blew up an enemy patrol craft, set another on fire, and severely damaged a third, at the cost of one officer slightly wounded. On the last day of the month, Coastal Command Beaufighters set an enemy merchant ship on fire which was taking advantage of bad weather to make a passage along the Norwegian coast without escort.

MEDITERRANEAN.

This month saw the extension of the war from Sicily to Europe proper in the mainland of Italy. On the morning of September 3 the Eighth Army crossed the Straits of Messina in landing craft, escorted and supported by a force of cruisers, monitors, destroyers, gunboats and other small craft. There was no naval opposition and the Italian troops in Calabria offered no more than a token resistance. As a matter of fact, though it was not known at the time to the troops engaged, the terms of surrender of Italy had actually been signed that morning ; but they were not made known until September 8. The resistance from the German forces in southern Italy was much stiffer, but they were not in great force there.

The armistice terms granted by General Eisenhower, the Allied Commander-in-Chief, as far as sea conditions were involved, provided that all Italian ships, warships and merchant ships alike, should be surrendered to the Allies. Admiral Sir Andrew Cunningham, on the evening of September 8, broadcast instructions to all Italian seamen to be careful of German attempts to seize their ships, and to sail them forthwith to ports under Allied control. He reminded them that Italian merchant shipping would be needed for the transport of food to starving Italy, and Italian warships for their protection against German attack. Three days later he was able to telegraph to the Secretary of the Admiralty, " Be pleased to inform their Lordships that the Italian Fleet is now anchored under the guns of Malta."

Actually the surrender was a more protracted business than might be inferred from this terse report. The main body of the Italian fleet which sailed from Spezia to comply with Sir Andrew Cunningham's instructions was attacked by German bombers off the northern end of Sardinia, and the flagship Roma, the newest battleship of the Italian Navy, was sunk by a bomb which penetrated to her magazine. By a coincidence, the attack was witnessed by a British reconnaissance aircraft, which had been dispatched to establish contact between the Italian ships and the British squadron which was on its way to meet them and escort them in. The pilot described how, after the Roma had been hit amidships by a bomb, in spite of having taken avoiding action, she appeared to break in two, while there was an uprush of smoke to nearly 4,000 feet from her. She sank rapidly in two parts, the bow and stern folding up and disappearing last, as did the Invincible in the Battle of Jutland, when her midship magazine exploded.

By September 10 the ships which had arrived at Malta were the battleships Vittorio Veneto, Italia (ex-Littorio, renamed since the fall of the Fascist regime), Duilio and Doria ; the cruisers Cadorna, Pompeo Magno, Savoia, Garibaldi, Duca d'Aosta, and Montecuccoli ; and seven destroyers. Three days later it was reported that they were joined by the battleship Cesare, the seaplane carrier Miraglia and four more destroyers. Several submarines arrived later and, after a few days, all the Italian ships, were sent on, first to Alexandria and later to further destinations which were not disclosed.

The Eighth Army continued its progress in the occupation of Calabria, assisted as necessary by further landings at various points on the coast. On September 8, troops were landed at Vibo Valentia, in the Gulf of Eufemia, a place often bombarded from the sea during the Sicilian campaign, and Taranto was occupied on September 9. But the main new landing was that of the Fifth Army in the Gulf of Salerno on September 9.

The Allied naval forces at the landing, known as the " Western Task Force," were under the command of Vice-Admiral Henry K. Hewitt, U.S.N., with his flag in the U.S.S. Ancon. They were divided into the Southern Attack Force, commanded by Rear-Admiral J. L. Hall, U.S.N., responsible for landing U.S. troops on an eight-mile stretch of coast south of the river Sele, and the Northern Attack Force, commanded by Commodore G. N. Oliver, R.N., responsible for landing British troops on a ten-mile stretch to the north of the river. An instance of the cordial co-operation between the two Navies is afforded by the action of Rear-Admiral Connolly who, though actually senior in rank to Commodore Oliver, volunteered to serve as a Task Group Commander under him.

The covering force, comprising both battleships and aircraft carriers, was commanded by Vice-Admiral Sir Algernon Willis. Its composition, besides destroyers, was as follows :—

BATTLESHIPS :
H.M.S. Nelson—Flag.
,, Rodney.
,, Warspite—flag of Rear-Admiral Bissett.
,, Valiant.
,, King George V.
,, Howe.

AIRCRAFT CARRIERS :
H.M.S. Illustrious—flag of Rear-Admiral Moody.
,, Formidable.

CRUISERS :
H.M.S. Aurora—Broad Pendant of Commodore Agnew.
,, Penelope.
,, Sirius.
,, Dido.

The " Air Support Force," whose aircraft provided most of the fighter cover over the anchorages and beaches in the early stages of the landing, was under the command of Rear-Admiral Sir Philip Vian and consisted of :—

CRUISERS :
H.M.S. Euryalus—Flag.
,, Scylla.
,, Charybdis.

ESCORT CARRIERS :
H.M.S. Unicorn.
,, Hunter.
,, Battler.
,, Stalker.
,, Attacker.

DESTROYERS :
O.R.P. Slazak } of the Polish Navy.
,, Krajowiak }
H.M.S. Atherstone.
,, Liddesdale.
,, Holcombe.
,, Cleveland.
,, Puckeridge.
,, Calpe.
,, Haydon.
,, Catterick.

The full composition of the Attack Forces and the Support Forces—detailed as necessary for bombardments—have not yet been published. But as far as is known they were as follows :—

Southern Attack Force.

Rear-Admiral J. H. Hall flew his flag in the "Headquarters Ship" U.S.S. Samuel Chase.

CRUISERS:
U.S.S. Philadelphia, flag of Rear-Admiral L. A. Davidson.
„ Savanna.
„ Boise.

DESTROYERS:
U.S.S. Plunket, Niblack, Benson, Cleaver, Mayo, Wainwright, Trippe, Rhind, Rowan, Knight, Woolsey, Ludlow, Edison, Nicholson, Bristol, Cole, Bernadou and Dallas.

MINESWEEPERS:
U.S.S. Strive, Seer, Skill, Speed, Steady, Sustain, Symbol, Pilot and Prevail, with 15 small motor minesweepers known as "Y.M.S." (Yard minesweepers).

The following ships of the Royal Navy formed part of the Southern Attack Force:—

H.M.S. Ulster Queen.
„ Palomares.

MONITOR:
H.M.S. Abercrombie.

CRUISER:
H.M.S. Delhi.

DESTROYERS, ETC.:
H.M.S. Oakley, Hambledon, Derwentdale, Empire Charmian, Boxer, Bruiser, and Thruster.

The above are exclusive of the large numbers of transports and landing craft employed.

In the Northern Attack Force, Commodore Oliver flew his Broad Pendant in H.M.S. Hilary and Rear-Admiral Conolly in U.S.S. Biscayne, "Headquarter Ships." Other ships were:—

H.M.S. Alynbank.

MONITOR:
H.M.S. Roberts.

CRUISERS:
H.M.S. Mauritius—flag of Rear-Admiral Harcourt.
„ Uganda.
„ Orion.

DESTROYERS:
H.M.S. Laforey, Loyal, Lookout, Tartar, Nubian, Mendip, Brecon, Blankney, Brocklesby, Blencathra, Eggesford, Quantock, Dulverton, Tetcott, Belvoir, Blackmore, Beaufort, Exmoor, and Ledbury, with the Pindos of the Greek Navy.

MINESWEEPERS :

H.M.S. Fly, Rhyl, Clacton, Polruan, Brixham, Stornoway, Bude, Espiegle, Circe, Cadmus, Acute, Albacore, Mutine, Rothesay, and Felixstowe, with the minesweeping trawlers, Coverley, Tango, Pirouette, Gavotte, Ensay, Mousa, Sheppey, St. Kilda, Minuet, Stella Carina, Visenda, Reighton Wyke, eight British motor minesweepers and four American Y.M.S.s.

OTHER SHIPS :—

H.M.S. Glengyle, Royal Ulsterman, Princess Beatrix, Ulster Monarch, Royal Scotsman, Prince Albert, Prince Charles, Prince Leopold, Princess Charlotte and Princess Astrid, with more than 70 small naval craft, both British and American, on convoy and anti-submarine duty.

Besides the two main landings, there were two subsidiary landings, west of Salerno, one by U.S. Rangers at Maiori and the other by a British Commando Force at Vietri sul Mare, under the naval command of Commander S. H. Dennis, R.N., in H.M.S. Prince Charles. A mixed British and American force, which included the Dutch gunboats Soemba and Flores, under Captain Andrews, U.S.N., in U.S.S. Knight, was detailed to occupy the five islands off Naples, from Ventotene to Capri. An anti-E-boat screen, of 16 U.S. " P.T. boats ", under the command of Lieutenant Commander Barnes, U.S.N., was provided for the whole Western Task Group.

The main landing started just before 4 a.m. on September 9. The anchorages and beaches were found to be thickly mined and, in spite of gallant and devoted work by the minesweepers, the assault troops suffered some casualties ; but a foot-hold was quickly gained. The enemy, however, in spite of having lost the collaboration of the Italians, and of the heavy bombing of his communications, was able to rush forces rapidly to the area, and for some days the situation was critical. In Mr. Churchill's words, " from day three to day seven the issue hung in the balance, and the possibility of a large-scale disaster could not be excluded. . . . The German hopes of driving us into the sea after a bloody battle on the beaches must at times have risen high. . . . The British battle squadron joined the inshore squadron in heavy bombardment, running a great risk within close range and narrow waters from the enemy's aircraft, U-boats —if any—and the glider bombs which inflicted damage on some of the ships. They came straight in, and stood up to it at close range and equalised and restored the artillery battle." The Fleet Air Arm, too, did sterling service, which is recorded in greater detail in a later chapter. On it fell a great part of the burden of providing fighter cover until airfields were secured on shore within fighter range of the scene of action. The whole great combined operation, which was eventually fully successful, was a magnificent example of the success that follows careful preparation and the full collaboration of all arms.

As soon as the Italian surrender became known, things began to move in Corsica. Patriots in the island rose against the German garrison, and they were reinforced by French Commando troops landed in the south of the island from the French cruisers Le Terrible and Le Fantasque on September 13. The Germans were rapidly driven back to the north of the island, where they made strenuous efforts to get away by sea from Bastia, only to suffer heavy losses on passage, partly from Allied aircraft, but chiefly from British submarines. One of the latter reported sinking four small ships, a Siebel ferry and two landing craft which were attempting to carry away Germans. By the end of the month, they held no more than the extreme northern tip of the island.

The exploits of other British submarines were announced earlier in the month, in the last stages of the operation against Italy. Many tankers, troopships and supply ships were sunk by them, chiefly round the southern extremity of Italy, but some in the Ægean as well. On September 21 a flotilla of M.T.B.s entered the enemy-held Albanian harbour of Valona at night and sank two ammunition ships that were lying there, besides damaging two others.

The success of the Allies in Sicily, Calabria and Corsica was unfortunately not achieved in the islands of the Eastern Mediterranean. On September 24 the Germans announced that they had taken forcible possession of the island of Cephalonia, disarming or killing the Italian garrison. They also seized the other Ionian Islands, including Corfu, for though the Italians were in numerical superiority to the Germans, they had no stomach for further fight. If British or Allied forces had been available in sufficient strength, and could have been landed in the islands promptly on the collapse of Italy, all might have passed into our possession at small cost. But they were not, and in the Ionian Islands all that the Germans had to do was to overpower the war-weary Italians to establish themselves firmly in possession.

In the Dodecanese, there would seem to have been an even greater opportunity, for there were only 9,000 Germans in Rhodes, to 40,000 Italians, and none at all in Cos, Stampalia and Leros. But, doubtless in the hope that the 40,000 Italians would do the Allies' work for them, only a " small party " was sent there at the time of the Italian armistice. In the face of Italian apathy, it could accomplish nothing and had to come away again. It was only a week later that small British forces were put into Cos, Leros, Samos and some of the smaller islands. But the enemy still had the use of the airfields of Rhodes, so that the prospects of their being able to hold those islands was small. However, beyond sporadic air bombing, no serious attack was made on them up to the end of the month.

INDIAN OCEAN.

On September 6 American heavy bombers attacked Japanese shipping and installations at Cornicobar Island, in the Nicobar group.

On September 14, the Italian sloop Eritrea arrived at Colombo and surrendered in compliance with the terms of the Italian Armistice.

On September 27 the South African naval authorities announced that aircraft of the R.A.F. had reported having destroyed a U-boat in the Indian ocean off the South African coast, which had been attacked five days earlier by the S.A.A.F. Their first attack with depth charges damaged the U-boat so that it was unable to dive. The second destroyed it.

NEW GUINEA.

On September 2 a Japanese convoy was attacked from the air as it was approaching Wewak. Three large supply ships, of some 7,000 tons each, were sunk by 1,000-lb. bombs, and a destroyer and a small supply ship were also hit and set on fire. On September 6 Allied troops landed in force near Lae. A week later, Salamaua was captured, to be followed by Lae itself three days later.

That day, a Tokyo broadcast reported a big naval battle in progress between New Britain and Bougainville. This appears to have been entirely imaginary, designed for home consumption, perhaps as an offset to the Japanese serious reverses in the Huon Gulf area of New Guinea.

On September 21 Australian troops landed 6 miles from Finschaven, in the rear of the Japanese positions. The landing was preceded by a bombardment by American warships.

SOLOMONS.

On September 5 it became known that the enemy had evacuated the seaplane base that they had had in use for many months at Rekata Bay, on the north-east coast of Santa Isobel Island. In the later part of the month, the Japanese activities were confined to air attacks on the airfield at Guadalcanal.

CENTRAL PACIFIC.

Marcus Island was attacked by a task force of the American Navy on September 1. According to the Japanese, the island was both bombed and bombarded.

On September 4 Nanumea, the northernmost of the British Ellice group, was occupied without opposition by American Marines.

On September 19 the Japanese occupying force in Tarawa, in the British Gilbert Islands, was heavily bombed by American air forces. Nauru was also attacked. The Gilbert and Ellice Islands had been occupied by the Japanese ever since the day after the attack at Pearl Harbour.

In the north, on September 12, American bombers again attacked Japanese ships and installations at Paramushire in the Kurile Islands.

LOSSES.

During the month, the loss was announced of the destroyer Puckeridge and the sloop Egret.

OCTOBER.

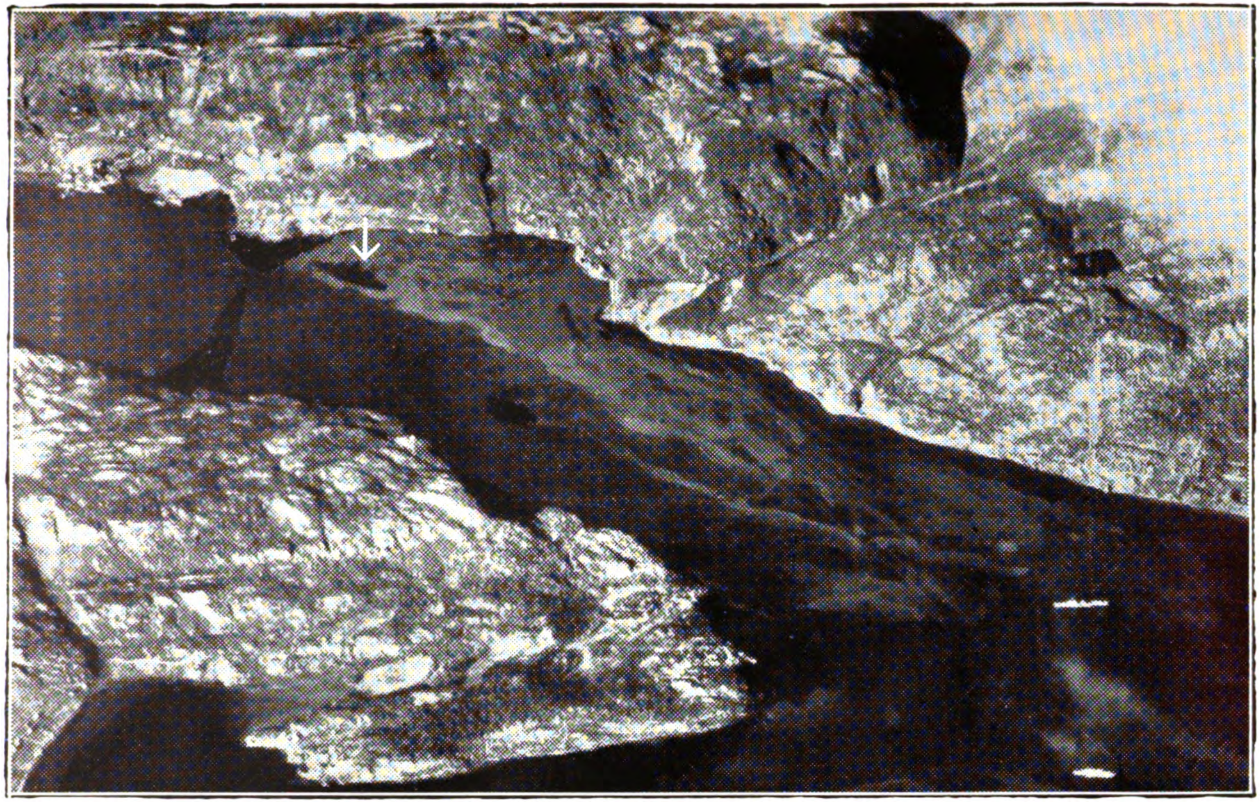
The tonnage losses during October were the second lowest of the whole war, but the battle against U-boats continued at full pressure. During the three months August, September and October, 60 U-boats were destroyed, making 150 in the last six months. This record was all the more gratifying because of the small number of U-boats that were operating for the first half of the three months of that period. At the same time it had to be recognised that the shipping losses in October, satisfactorily small as they were, showed a rising tendency. The resumed U-boat activity was chiefly in mid-Atlantic, and the U-boats had entirely abandoned the United States coastal area in which they had done so much execution during the previous year. Vice-Admiral Andrews, U.S.N., commanding the Eastern Sea Frontier, stated on October 18, that only three ships had been sunk in his area since July, 1942, and that no ships at all had been sunk there since September 1. He warned his hearers, however, that no vigilance or protective measures could be relaxed.

In the early part of October, a hunting group from the Royal Canadian Navy was employed on offensive patrol against U-boats in the approaches to the Bay of Biscay. It consisted of the Tribal class destroyers Athabaskan and Iroquois with the corvettes Edmundston, Snowberry and Calgary, and it worked in conjunction with Wellingtons of the Coastal Command, with highly satisfactory results, against the U-boats on passage in and out from their bases on the French coast. The ships of the group did not themselves destroy any U-boats in the course of this term of duty, but their collaboration was of the highest value to the air forces with which they were working, which did substantial execution. The destroyers and corvettes were instrumental in saving a number of survivors from aircraft which had been forced to alight in the sea by damage received in action with the U-boats that they had destroyed; and they also picked up a number of survivors from U-boats from time to time. Mr. Angus McDonald, Minister of National Defence for Naval Affairs in Canada, describing the work of this group some months later said, " The losses inflicted on the U-boats were so great that on some occasions the sea almost seemed alive with submarine survivors." On one occasion the Athabaskan and Iroquois sighted three German destroyers in the Bay of Biscay and chased them, but were unable to overtake them before they regained the shelter of the French coast. On other occasions they were attacked by German aircraft, often using glider bombs; the Athabaskan was hit and damaged by one of these, but their accuracy seems to have been low for no other of the ships was hit.

On October 12 the Prime Minister announced in Parliament that the Portuguese Government, in conformity with its ancient treaty obligations, had granted to Great Britain and her Allies the use of the islands of the Azores for their armed forces for the period of the war. This was of very great advantage to anti-U-boat forces, both sea and air, since it enabled them to maintain patrols over a large and important area which had been inaccessible to them hitherto. The British forces had actually landed in the Azores before Mr. Churchill had made his announcement. They were conveyed there by sea, air protection during the voyage, after they passed out of the operational area of the Coastal Command, being provided by naval aircraft from the escort carrier H.M.S. Fencer. On arrival in the Azores the airfield was taken over by the ground staff of the R.A.F. in readiness for the R.A.F. squadrons which were to operate from it. Until they arrived, air protection was still given by the Fencer's aircraft, which also carried out the necessary reconnaissance, working under R.A.F. command from the airfield; it was, of course, impossible for them to operate from their ship while she was in harbour. After the arrival of the R.A.F. squadrons, when the airfield had been made fit for them, the Fencer recovered her aircraft and returned to her normal duty as an escort carrier.

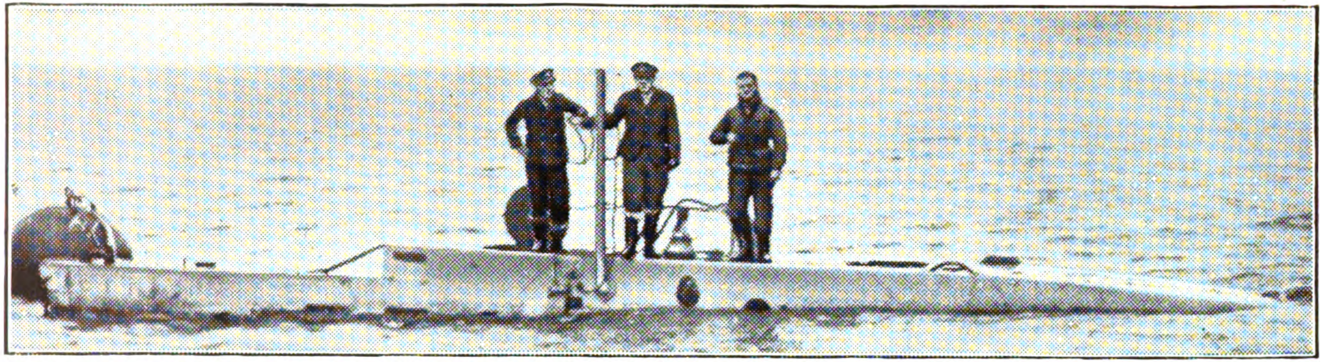
HOME WATERS.

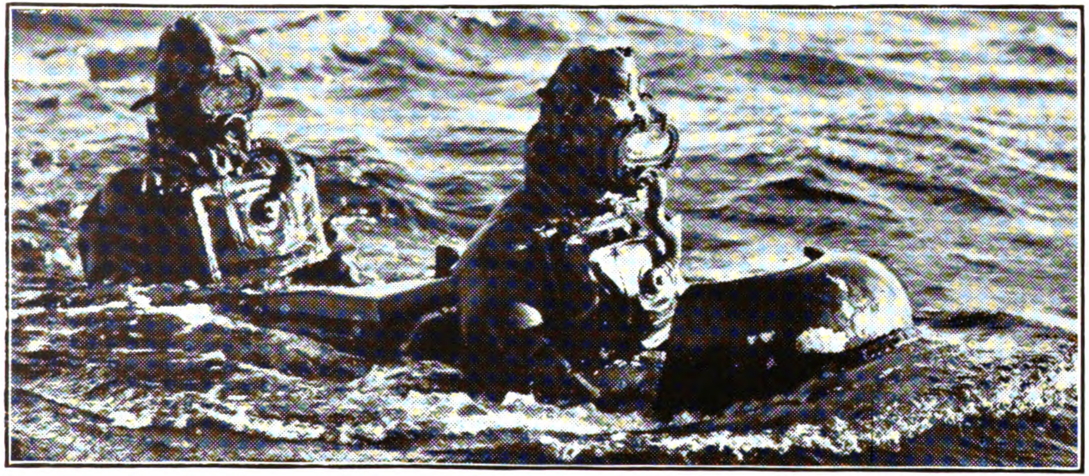
On October 4 the Home Fleet under the command of Admiral Sir Bruce Fraser made an attack on German traffic on the Norwegian coast off Bodo, just south of the Lofoten Islands, a place where it is necessary for coastal traffic to emerge into open sea. The American aircraft carrier



German Battleship Tirpitz in Alten Fjord leaking oil fuel after being torpedoed by British Midget Submarines.

(*Official photograph. Crown copyright reserved.*)





Above : British Midget Submarine. *Below :* " Human torpedo."

(*Official photograph. Crown copyright reserved.*)

U.S.S. Ranger formed part of the Fleet on this occasion, together with a number of American destroyers, and the actual attack was made by naval aircraft. The presence of the Ranger, and her participation in this attack, were of particular interest because six months earlier Hitler had awarded a special decoration to Lieutenant Otto von Bülow, the commanding officer of a U-boat, for sinking her. Actually the Ranger had never been damaged, and no aircraft carrier was sunk at all at the time von Bülow claimed to have destroyed her. The result of the raid off Bodo was that an 8,000-ton tanker was hit and had to be beached; two cargo ships, one of the same size and one smaller were set on fire; a loaded barge and a small coaster were hit and so damaged that they were abandoned by their crews; and three other ships were hit and damaged to a greater or less degree. There was no air opposition to the raid on the convoy, but two German aircraft which were trying to shadow the Home Fleet as it withdrew after the raid, were shot down by American fighters.

In the Channel and in the narrow seas, as well as on the Norwegian coast, there were a number of actions by light craft. On October 5 the British light forces—which were believed to include destroyers—located and engaged a number of Elbing class German destroyers near the Sept Iles off the coast of Brittany. When engaged, the enemy immediately turned away and the action took the form of a general chase. Two of the German ships were set on fire, but it was not possible to observe the full result. The British ships had a few casualties. On October 16 the Germans reported an action between light forces off the Dutch coast. No British report of this action was issued, so it would appear that if it took place at all, it was so indeterminate as to be of no importance. It was quite possible, however, that no British forces were involved, for numerous cases have occurred at night of German forces engaging each other in mistake for enemies. On October 20 Norwegian light forces penetrated the leads some 70 miles north of Bergen, engaged and damaged a German patrol craft by gunfire and sank with a torpedo a small merchant ship that she was escorting. It would appear that the Norwegian boats, together with some British boats working with them, may have been maintaining themselves in that area for several days on end; for the same announcement which described the success of the Norwegian light forces had mentioned that British forces in the same area had shot down a German aircraft four days earlier. All the Allied forces returned safely to their base, though they had some casualties. On October 23 another action took place off the Sept Iles. A strong British force was carrying out a sweep off the French coast between Ushant and the Channel Islands, in the course of which they encountered and engaged an enemy force of torpedo craft. The visibility was poor and in the action which ensued the cruiser Charybdis and the destroyer Limbourne were both hit by torpedoes and were sunk. Casualties appear to have been considerable, and the bodies of a number of British seamen were washed up on the shores of the Channel islands, where they were buried with full honours; practically the whole of the British community attended the funeral.

Two days later a number of E-boats which attempted in strength to attack a British east-coast convoy in the North Sea were intercepted by H.M. ships and driven off with severe losses, in a series of running actions lasting nearly five hours. Four E-boats were destroyed and seven were damaged—while no attack on the convoy developed at all. The first group of about five E-boats was intercepted by the destroyer Pytchley and driven off by gunfire, one of them being seen to be hit. Shortly afterwards, what was probably the same group was engaged by M.G.Bs. and one of them severely damaged. Another group was engaged by H.M.S. Worcester; one E-boat was blown up and a second severely damaged. Just afterwards, yet another was hit by gunfire from H.M.S. Mackay. As they retired the E-boats were intercepted by another patrol of M.G.Bs; two were blown up and a third was destroyed by ramming. Prisoners were taken. In the last action of the night three more E-boats were damaged by another M.G.B. patrol.

On the last day of the month a British and a Norwegian light craft, working together, intercepted two small Norwegian coasters running for the Germans, about 300 miles north of Bergen. One of them was found to be carrying potatoes and was allowed to go. The other was carrying cement for German fortifications and she was sunk after her company had been ordered into their boats. On their return voyage the two Allied ships were heavily attacked by German fighter and bomber aircraft, two of which were shot down and a third damaged. But the British boat was so badly damaged that she had to be abandoned and sunk, her company being taken off and brought back by the Norwegian which was undamaged. There were a few casualties in both boats.

MEDITERRANEAN.

The liberation of Corsica was announced on October 4, the day on which, 20 days after they first landed in the island, the French forces entered Bastia, the last port from which German troops could get away by sea. Nearly 1,500 prisoners were taken.

Answering a question in Parliament on October 12, the Prime Minister stated that over 100 Italian warships were in Allied hands, including five battleships out of six and eight cruisers out of eleven. More than 150,000 tons of merchant shipping had also passed into our hands.

In Italy, on the night of October 2, troops of the Eighth Army working their way northward on the right flank, made a "leap-frog landing" at Termoli, 17 miles in advance of where they were already in contact with the Germans. The landing took the enemy by surprise and was completely successful, so that the main body of the Eighth Army was able quickly to advance its front and join up with the newly-landed party. It was an amphibious operation of the most highly developed sort, and it met with the success that careful planning and skilful execution deserved. This type of operation was repeated on the other side of Italy on October 18, when troops of the Fifth Army landed to the north of the river Volturno and enabled the Army quickly to pass over that difficult obstacle, of which the steep banks and rapid stream would have made its crossing exceedingly difficult and costly, if it had had to be made in the face of unhindered resistance by an enemy established on the farther bank.

Naval operations in this theatre consisted for the rest of the month in support of the Army's flanks where they rested on the sea and in the operations of light craft against attempted enemy communications by sea both in the Tyrrhenian and the Adriatic Seas. On the night of October 14 British light coastal craft sank two enemy ships in the Piombino Channel, between Elba and the mainland. The same night, British destroyers intercepted in the Adriatic two Italian ships which were under the control of German armed guards. One of them, laden with bauxite, was set on fire by the Germans and could not be saved. The other, a tanker, was captured and taken into harbour. On the night of October 21 a large German ammunition ship, which was escorted by four armed small craft, was destroyed by American P.T. boats south-east of Elba.

On October 18 Admiral of the Fleet Sir Andrew Cunningham relinquished the Command-in-Chief of the Mediterranean Fleet in order to take up the appointment of First Sea Lord of the Admiralty in succession to Admiral of the Fleet Sir Dudley Pound, who had resigned on October 1 owing to a breakdown in health. He was succeeded in the Mediterranean by Admiral Sir John Cunningham.

More successes by British submarines in the Mediterranean were announced by the Admiralty on October 7. In the Gulf of Genoa and off Corsica four ships had been destroyed while sailing under escort, one of them an ammunition ship, the other three carrying troops, probably endeavouring to get away from Corsica. Enemy naval auxiliaries were sunk off Elba, and also in the Adriatic, off the Italian coast north of the Army positions. A small supply ship was sunk off Toulon. In the Ægean, a submarine bombarded the iron works at Stratoni. The Polish submarine Dzik, which had joined the Mediterranean Fleet for the time being, operated off Corsica and did notable execution against the Germans endeavouring to get away. She sank two ships and three Siebel ferries off Bastia, and also hit with torpedoes a large transport and a large tanker, but could not observe the final result of that attack.

In the Dodecanese, the British forces which on September 16 had taken possession of Cos, Leros and Samos, as well as some of the smaller islands, were composed as follows. In Cos, the only occupied island which possessed an airfield, there was a Spitfire Squadron, a battalion of the Durham Light Infantry, details of the R.A.F. regiment including the sea-air rescue service, and ground staff of the airfield. In Leros, there were units of the Buffs, the Royal West Kent Regiment, the King's Own Regiment, the Royal Irish Fusiliers, and details of the R.A.F., and special troops. In Samos there were Greek troops. On October 3 a German expedition carried in transports and landing craft, escorted by German-manned torpedo boats of the Italian Navy and by E-boats, landed in Cos at three points and were later reinforced by airborne troops. In two days' fighting they had achieved the recovery of the island, and the British forces in the other islands from that time onward were without any close air support. The enemy still had the full use of the commodious airfield of Rhodes, Crete, and the mainland of Greece, so that they were able to operate almost unopposed in the air over the whole area. A few Beaufighters, presumably working from Cyprus 300 miles away, did what they could ; but there were not very many of them, and consequently British ships were exposed to intensive air attack whenever they entered the Dodecanese area.

Nevertheless ships of the Levant division continued to operate there without hesitation, taking supplies, reinforcements and reliefs to the garrison of Leros and scouring the surrounding water for enemy craft or invading forces. In the words of a despatch from Alexandria, printed afterwards in *The Times* :—

> "Almost every night a force of destroyers slipped into the Ægean loaded with troops, supplies and ammunition. Quietly the ships threaded their way through the island maze until off the port of Leros, where the supplies were transferred to lighters, caïques and coastal craft which operated from Leros. Landing went on often under enemy flares and bombs.

> Remaining only long enough to embark the wounded, the destroyers joined others in the general patrol area, which generally meant stealing silently round the creeks and inlets of dozens of small islands searching for E-boats, supply-ships and landing craft. . . ."

On October 7, the cruisers Syrius and Penelope with two destroyers located an enemy expedition off Stampalia, carried in two merchant ships and six landing craft, all crowded with troops. All eight enemy ships were destroyed. But the odds were too great, since after the fall of Cos the enemy could always bring strong forces of bombers, unopposed in the air, against any warships moving by sea. On October 22 the enemy succeeded in landing airborne troops in Stampalia and in recovering that island, as well as the smaller island of Levita nearby. By the end of the month Leros and Samos were the only islands remaining in British hands, and the maintenance of the British garrisons there was imposing a heavy burden and substantial losses on the Mediterranean Fleet.

On October 6 the loss of the Greek submarine Katsonis was announced, and on October 9 that of the Greek destroyer Queen Olga. The latter had done good service in Sicilian waters during that campaign, but whether she was lost there or in the Ægean was not revealed. The Greek destroyer Miaoulis operated in the Dodecanese during the campaign just described, but names of others, if there were any, were not disclosed.

INDIAN OCEAN.

On October 11 enemy aircraft flew over Ceylon in moonlight. One of them was destroyed. It was considered probable that they came from Japanese submarines.

NEW GUINEA.

Finschaven was captured on October 2, so that the enemy was finally expelled from the Huon Gulf area. On October 17 the Japanese attempted to land reinforcements from three barges ; but two of them were sunk by air attack and the third withdrew to New Britain. The next day, an American bombing force, after attacking Rabaul, reported sinking a Japanese destroyer, a gunboat and a 6,000-ton tramp, and setting on fire a corvette and another large tramp.

SOLOMON ISLANDS.

On the night of October 1, American bombers reported sinking a Japanese cargo ship, a destroyer, and another ship in the Bougainville Strait. The same night, American surface forces sank nine Japanese barges trying to reach Kolombangara from Choiseul and damaged five others. On the night of October 6 eight Japanese warships, some of which were carrying troops, were intercepted by three destroyers, Chevalier, Selfridge and O'Bannon, under Captain F. R. Walker. In the action which ensued, a Japanese cruiser and two destroyers were sunk, and the other two destroyers were damaged, for an American loss of the Chevalier, torpedoed and sunk.

The next day, Allied Headquarters announced that the enemy had apparently abandoned Vila, their chief position in the island of Kolombangara. The place was at once occupied by the Americans and by October 10 there was no organised Japanese resistance in the whole island. By October 25, a runway for fighters had been made in the island of Vella

Lavella. On the morning of October 26 American forces seized Treasury Island in the face of some opposition, and so acquired an advantageous base for the campaign against the Japanese in Bougainville. Two days later an American expedition landed in Choiseul and after mopping up some Japanese positions there, withdrew again.

CENTRAL PACIFIC.

On October 5 a task force of the Pacific Fleet commanded by Rear-Admiral A. E. Montgomery made a heavy attack on the Japanese forces in Wake Island: 320 tons of bombs were dropped, and by the time the attack was over it was considered that Wake had been so effectively neutralised as a Japanese station that even if it were not attacked again it could no longer be a threat to Allied naval operations. The Assistant Secretary of the Navy speaking in Washington revealed that more aircraft carriers had been used in this attack than had ever been assembled in one place before.

On October 19 and 29 the further successes by American submarines operating in the Pacific were announced by Colonel Knox which brought the total number of Japanese ships sunk, probably sunk or damaged, since the beginning of the war to 474.

LOSSES.

During the month the loss was announced of the cruiser Charybdis, the destroyers Intrepid, Panther and Limbourne, the minelayer Abdiel, the frigate Itchen, the corvette Polyanthus and an armed dritter.

NOVEMBER.

The shipping situation continued to improve throughout the month. This was due not to any relaxation in the efforts of the U-boats, but to the greatly increased efficiency of the measures taken against them. The number of merchant ships sunk by U-boats during the month, in spite of his resumption of the use of long-range aircraft to assist in concentrating U-boats on to convoys, was lower than in any single month since May 1940. Part of the increased efficiency of the defence was due to the advantage gained by having the Azores available as air bases; part of it was due to the extreme caution which characterised the U-boats tactics, which lessened the number of opportunities for Allied attacks on them. This lack of success must have been all the more galling to the enemy since, according to the broadcasts by Edgar Schroeder, the naval expert of the German News Agency, high hopes had been built on the resumption of the attack and the new strategy and tactics to be adopted. " We have now got the sand out of our gigantic U-boat machine," he said—thereby, it may be noted, admitting that the machine had been out of action for some time—" and there is no danger of the enemy counter-measures preventing it from working." Yet, in the event, that was exactly what the Allied counter-measures did.

On November 11 the United States War Department announced in Washington that the U.S. Army Air Forces which had been operating against U-boats at sea had been withdrawn, and that thenceforward the

U.S. Navy would bear the sole responsibility for anti-U-boat operations. Certain Army Air Forces had been allocated to that duty in the early stages of this war, when the Naval air arm was all too weak for the voluminous duties thrown on it. That the borrowed Army forces could now be released was evidence that naval expansion was overtaking requirements.

Descriptions of a number of battles fought against U-boat packs at about this time were issued later. In one space of eight days, aircraft of the Coastal Command, together with U.S. Naval aircraft operating under Coastal Command Groups, in the course of giving protection to three separate convoys, made attacks on no less than 15 U-boats, of which six were sunk, three of them within 24 hours. One Liberator aircraft, commanded by Wing-Commander R. M. Longmore, was lost. A signal was received from it on the second day of the battle that it was attacking a U-boat, but nothing more was heard or seen of it, it must have been shot down in the attack. So efficient was the air reconnaissance, and so unremitting their attacks, that the U-boats were unable to bring off a single attack on a merchant ship.

In the next battle, in which some of the same air squadrons took part, the Seventh Escort Group under Commander P. N. Gretton did much execution. It lasted for two days, in which five U-boats were destroyed for certain and at least three others damaged. Three Coastal Command aircraft were damaged in action and sustained casualties, but most of their crews were rescued by H.M. ships. Again, so effective was the protection given to the two convoys involved that the U-boats were unable to bring off any concerted attack on them, and only one merchant ship was lost. At one time when the two convoys were about 60 miles apart, it was estimated that there was at least 20 U-boats in the vicinity, but after five of their number had been sunk—four of them by aircraft and one by H.M.S. Byard, frigate—they kept at a safe distance from the convoys on which no further attack was made. The feature of these engagements was the volume and accuracy of the A.A. fire from the U-boats encountered by the attacking aircraft, which on occasion suffered severely from it. One R.C.A.F. Sunderland, commanded by Flight-Lieutenant P. T. Sargent, had three of the crew killed and the aircraft nearly disabled as it came in to the attack. But Mr. Sargent held on and his depth charges straddled the U-boat, which was severely damaged, and may actually have been destroyed. Unfortunately he too lost his life when he had to alight in the sea and his flying-boat broke up on impact. The remainder of his crew were rescued by H.M.S. Drury, one of whose seamen swam to the wreck to disentangle the second pilot before it sank.

In the third battle, the Seventh Escort Group was again engaged—it was on a cruise that lasted 25 days, in which it steamed 7,000 miles and crossed the central part of the Atlantic six times. Only two U-boats were destroyed for certain in this battle; but two valuable west-bound convoys were given such complete protection that the enemy did not succeed in making a single attack on them This battle illustrated very well how deadly to the U-boats is the combination of ships and aircraft working together. Ships can take up the attack while the enemy, by submerging, can evade attacks from the air, while the aircraft can direct ships to the attack of U-boats that they could otherwise never sight.

HOME WATERS.

Weather precluded the operation of light forces for most of the month. But in the small hours of November 3, an attempted attack by E-boats on a British coastal convoy was intercepted by the destroyer H.M.S. Whitshed. Three of the attackers were hit by gunfire, one of which was certainly severely damaged and may have been sunk. Later, the E-boats were attacked by British M.G.Bs, but the engagement was inconclusive; there were no British casualties.

The next night, British light forces engaged a flotilla of E-boats off the Hook of Holland and severely damaged two of them before they could disengage. Later, the same British patrol attacked a convoy, disabled two enemy trawlers of the close escort, and set on fire a medium-sized ship in convoy. Later one British boat was disabled in an engagement with R-boats of the outer escort, and as she could not be towed, her company were taken off and she was sunk by her consorts. There were some casualties in other boats, which also sustained some damage.

MEDITERRANEAN.

On November 1 the Italian Regolo class cruiser Ottaviano Augusto, which was under German control and was lying in Ancona harbour, was attacked by medium bombers of the Allied Mediterranean Air Force and sunk. She was afterwards photographed lying on her side in the water. The remainder of the naval operations in Italian waters during the month were confined to co-operation with the Army whenever opportunity offered. On November 8 the destroyers Queenborough and Raider successfully bombarded enemy positions on the west coast of Italy, and thereby facilitated the Fifth Army's attack on San Salvo. This sort of support was given on both flanks of the Army whenever need arose throughout the month, the next occasion reported being on November 22 in the Gulf of Gaeta. In the Adriatic, British destroyers operating off San Benedetto, about 50 miles south of Ancona, engaged an enemy convoy of small craft, moving under the guns of shore batteries, sinking a lighter and damaging another lighter and a tug. The shore batteries opened fire on the destroyers which sustained some small damage.

In the Dodecanese, the story of lost opportunity was continued. British destroyers operating at night round Leros and in the approaches to it from the southward, were able to delay to some extent the enemy's assembly of the forces he needed for the final recovery of that island, but not to prevent it. At dawn on November 12 Leros was attacked by German sea- and air-borne troops, supported by overwhelming strength in the air, which succeeded in making good a foothold on the east coast. The British garrison of some 4,000 men, with the help of further small reinforcements landed each night, two days later very nearly succeeded in driving the Germans into the sea again. On the night of November 4 a British destroyer landed reinforcements in Port Laki and embarked some casualties; then steaming round to the east coast to reinforce the patrol there, sank a German landing craft full of troops which was approaching the German foothold at Alinda Bay. Two other loaded barges were sunk in the same vicinity by British light craft—which were indeed the only British warships that were able to remain continuously in the Ægean throughout the two months of the abortive campaign under review. For a short time it was thought possible that the island might be held; but the hope proved vain. The next day, in the words of the Deputy-Prime Minister in Parliament, "The garrison had been fighting incessantly for five days and exposed to concentrated bombing attack; in the end this produced a weariness too great to be resisted." Their resistance ceased and the Germans resumed possession of the island. On November 23 it was announced that all British and Greek troops, with some of the Italian troops there, had been withdrawn from Samos without loss during the preceding few days. That day the German command announced that they had recaptured Samos. The Ægean gamble had failed and was at an end.

The warships that operated in the Ægean during the Dodecanese campaign included Greek Destroyers and two French light cruisers—ex-*contre-torpilleurs*—Le Terrible and Le Fantasque. British submarines continued to operate with effect throughout the Mediterranean, including the Ægean, whenever enemy targets presented themselves. On November 10 a report of their recent operations was published by the Admiralty describing the destruction of seven ships, probable destruction of three more and damage to six others, in localities as widely separated as the gulf of Genoa and the Dodecanese.

On November 7 an announcement was issued from Hitler's headquarters of an air attack made by the Luftwaffe on an Allied troop convoy off the North African coast. It stated that the convoy consisted of 22 troop transports escorted by eight destroyers. It claimed to have hit 13 large liners, totalling 140,000 tons and two destroyers, and stated that several of the transports were afterwards seen burning and in a sinking condition. There was very little truth in this announcement. The attack was actually made, but the damage achieved was grossly exaggerated.

On November 24 heavy bombers of the North-West African Strategic Air Force attacked the submarine base at Toulon and warships that were in German hands. Subsequent air reconnaissance showed that five German-controlled warships were sunk, five smaller ones probably sunk, two armed merchant ships severely damaged, and extensive damage done to dry docks.

On November 6 the German news agency stated that four or five Allied battleships, British or American, three or four aircraft carriers, seven or eight heavy cruisers and more than ten destroyers had already been transferred from the Mediterranean to the Far East. There was no basis for the figures given, which would seem to have been derived solely from conjecture; but it is exceedingly probable, the need for heavy ships in the Mediterranean being largely at an end after the surrender of the Italian Fleet, that some transfers of British ships to strengthen the Eastern Fleet had actually been made.

INDIAN OCEAN.

On November 1, the Japanese positions in the Andaman Islands were bombed by American aircraft from China.

On November 10, Japanese aircraft again approached Ceylon in moonlight in the early morning. One of them was destroyed and one damaged. The visit was repeated 48 hours later, and again one of the strangers was destroyed. No bombs were dropped on either occasion. It was considered possible that the aircraft came from Japanese submarines.

SOUTH-WEST PACIFIC.

On November 1 American forces landed in Empress Augusta Bay, on the west coast of the island of Bougainville, the northernmost of the Solomon group. Shortly before noon on that day four Japanese cruisers and eight destroyers were observed further to the northward, but they retired before they could be engaged by the American force under Rear-Admiral Merrill, which was covering the landing. That night, however, they again approached the Empress Augusta position; but they were driven off with considerable damage, one cruiser and four destroyers being believed sunk, two other cruisers and two destroyers hit. No American ship was lost. The Japanese made air attacks on the American cruisers and destroyers in Empress Augusta Bay on November 8, and on the night of November 12 a Japanese attack on Admiral Merrill's ships which were covering the passage of more transports was beaten off with loss. On November 17 the destroyer McKean was sunk by Japanese air attack, also when approaching Empress Augusta Bay. On the night of November 25 four American destroyers attacked a superior Japanese force between Bougainville and New Ireland and inflicted considerable damage on the enemy without loss or damage to themselves.

During October the enemy had been observed to be moving large reinforcements, with a strong escort of cruisers and destroyers, southward to New Britain, and consequently a very heavy air attack was made on November 2 on Rabaul. Nearly every ship in the harbour was hit if not sunk, and 67 Japanese aircraft were definitely destroyed, with 23 more probably destroyed. Three Japanese destroyers were reported sunk and two heavy cruisers hit, one of which was severely damaged. Excluding small coasters, merchant shipping to the amount of 94,000 tons was sunk; direct hits were also made on seven large ships aggregating 30,000 tons and two tankers of 8,000 and 6,000 tons respectively. "The entire shipping area," said the report, "was a scene of wreckage and utter destruction."

This was followed up on November 5 by an attack by carrier-borne aircraft from a task-force under Rear-Admiral Sherman. These aircraft found six Japanese cruisers in the anchorage; they hit five of them with bombs, torpedoed the sixth, and shot down 25 Japanese aircraft at the cost of three American planes lost. A week later, the carrier-borne aircraft from two task forces, Rear-Admiral Sherman's and Rear-Admiral Montgomery's, attacked again: 63 Japanese planes were shot down for the loss of seven American; a Japanese cruiser and a destroyer were sunk in Rabaul harbour, and 11 other destroyers were reported as "probably damaged."

This heavy execution done against the Japanese reinforcements destined for New Guinea, and their escorting warships, left the forces already there without the support they were expecting, and greatly facilitated the advance of Australian troops in the Finschaven district. On November 21 air forces, sweeping round the adjacent waters, sank five Japanese transports or supply ships and damaged two others, there and in Kavieng harbour. A week later, a Japanese cruiser was hit by a bomb off New Ireland and blew up.

On November 29, Vice-Admiral Thomas C. Kinkaid, U.S.N., arrived in Australia to take command of the Allied naval forces there.

CENTRAL PACIFIC.

The Gilbert Islands, occupied by the Japanese immediately after Pearl Harbour, had been attacked by air from time to time from September afterwards. On November 19, a task-force under Vice-Admiral Spruance began the attack which resulted in their re-occupation by American forces. Admiral Spruance's force, which comprised all classes of warships from battleships downwards, bombarded the atolls of Makin and Tarawa on November 19 and 20. Landings began on November 21; the capture of Makin was announced on November 22, but in Tarawa, enemy resistance was much stiffer and it was four days before the Japanese defenders were subdued. The preliminary bombardment had wrecked everything above ground, had killed more than half of the 3,500 defending Japanese troops, and had silenced all their heavy guns. But their dug-outs, pill-boxes and bomb-proof shelters were partially intact, and the survivors fought to the bitter end.

Owing to an insufficiently accurate survey of the approaches to the beaches, some of the Marines' landing craft grounded on a ridge of coral as much as 800 yards from the beach, and the Marines, wading the rest of the way, lost heavily; nearly all those in the first wave of the assault were killed or wounded. The American casualties at Tarawa were 1,092 killed and 2,680 wounded. At Makin there were 65 killed and 121 wounded. The Japanese in Tarawa, numbering about 3,000 troops and 1,500 civilians, were practically all killed. During the attack the escort carrier U.S.S. Liscombe Bay was torpedoed and sunk by a Japanese submarine.

The exploits of U.S. submarines in all parts of the Pacific was regularly announced. On November 26, their destruction of nine more enemy ships was announced, bringing their grand totals to 355 sunk, 36 probably sunk, and 114 damaged.

LOSSES.

During the month, the loss was announced of the destroyer Eclipse, the minesweeper Cromarty, the submarines Usurper and Trooper, and an armed trawler.

DECEMBER.

The U-boats, finding the North Atlantic so unhealthy, again tried to find more profitable hunting grounds by going farther afield. Consequently, the bag of U-boats was smaller during the month than in November. But satisfactory protection was afforded to supply routes, and the shipping losses were again low. They may, however, have been rather higher than in the preceeding month. The Second Escort Group under Captain Walker again distinguished itself by sinking two U-boats in the space of no more than eight hours.

The first U-boat was encountered at night in a position north-west of the Azores and was illuminated by starshell from H.M.S. Kite. The enemy, a large patrol U-boat or supply U-boat, submerged 700 yards ahead of the sloop, which at once made three attacks with depth-charges. Meanwhile, other ships of the group closed at speed and shortly afterwards H.M.S. Starling gained contact with the enemy, which had apparently been forced to go deep. It was decided, since the night was very dark, to postpone further attacks till daybreak. Accordingly, for four hours, H.M.S. Starling, closely attended by H.M.S. Kite and H.M.S. Woodcock, kept in contact with the U-boat, which tried to elude the pursuit by moving very slowly on a south-westerly course ; but the attempt was unsuccessful.

With the first light of dawn, H.M.S. Woodcock resumed the attack. A few minutes after she had dropped the first pattern of depth-charges, noises of cracking, rending and breaking were heard coming from a point deep under water. Two explosions followed, the second nearer the surface of the sea. Soon afterwards, considerable quantities of oil and wreckage floated to the surface.

Early in the afternoon of the same day a second U-boat was detected by H.M.S. Wild Goose and shortly afterwards by H.M.S. Starling ; both ships attacked, and again breaking-up noises and a deep underwater explosion were heard. Out of a spreading pool of oil, which welled up to the surface, there appeared foodstuffs and clothing of German origin. Soon the sea was covered with abundant further evidence of destruction and, when the sloops left the scene of their successful attack, the oil-pool stretched for more than a mile in all directions.

The close of the year gave an opportunity to review the progress and trend of the U-boat war. Shipping losses in 1943 were only 40 per cent. of what they had been in 1942 ; but half the former occurred in the first three months of the year, one quarter in the next three months, and only one quarter in the last half-year. That is to say, in the first quarter of 1943 the rate of loss was only four-fifths of the 1942 rate ; in the second quarter it was only two-fifths and throughout the last half-year only one-fifth of the 1942 rate. This was a highly satisfactory result.

HOME WATERS.

Towards the end of the month, the rare event occurred of some operations of the Home Fleet being publicly announced.

On the morning of December 26, a British convoy carrying war material to Russia, passing through the Barents Sea, was some 40 miles south-south-east of Bear Island. Part of the close escort of the convoy consisted of a cruiser squadron of three ships—the Belfast, Sheffield, and Norfolk, under the command of Vice-Admiral R. L. Burnett—and a number of destroyers, amongst them a division consisting of the Musketeer, Matchless, Opportune, and Virago.

At 9.35 a.m. the German battleship Scharnhorst, which for the last year or more had been lying in a northern Norwegian anchorage, attempted to approach the convoy ; but before she got within sight of it she was engaged by Admiral Burnett's cruisers. The German report spoke of a naval " formation under the command of Rear-Admiral Bay," implying that there were other ships with the Scharnhorst : but throughout the action no other was seen by any British ships. If there were any German destroyers there they must have made themselves scarce as soon as the first action was joined. It may well have been that they started out with the Scharnhorst when she left harbour, but had been sent back again because the high wind and heavy sea made their operations difficult or impossible. The weather was bad enough seriously to hamper at a later stage the operations of the well-practised British destroyers, and it may well thus have been far too heavy for the Germans.

The Scharnhorst's proceedings on being engaged by Admiral Burnett's cruisers were curious. She behaved more as one would expect a destroyer to behave, when engaged by cruisers, than a battleship. She did not even return the fire of the cruisers, but immediately broke off action, retreated out of effective range, and steered on several different courses with the apparent object of deceiving her opponents as to her intentions. During this phase of the engagement the Norfolk reported making one hit on the enemy with her 8-inch guns. When last seen, the Scharnhorst was some distance to the east of the British cruisers and steering to the northward at high speed. Admiral Burnett rightly divined the enemy's intention to attempt to attack the convoy from a different bearing, diverted it away from the attacker, and maintained his own position between it and the enemy.

Three hours later at about 12.30, when the Scharnhorst again attempted to make contact with the convoy from a north-easterly direction, she found her approach once more barred by the British cruisers. Again Admiral Burnett attacked without hesitation, turning his ships bows on to the enemy in order to present the most difficult target to her fire. Again the German captain allowed himself to be baulked of his object by the attack of an inferior force. He turned away and steamed at high speed for the nearest base on the Norwegian coast. This time he did return the fire of the British cruisers, and the Norfolk was hit once by an 11-inch shell which caused some damage and 13 casualties ; but that did not deter them from pursuing the German battleship, keeping in touch with her and continually reporting her position and movements to the Commander-in-Chief, Admiral Sir Bruce Fraser, who was coming up with his flagship, the battleship Duke of York, with the cruiser Jamaica and four destroyers in company, moving so as to place that force between the Scharnhorst and her base, and so ensure bringing her to action. For the next four hours the enemy continued in head-long flight to the southward, shadowed by the British cruisers with four destroyers in company, and reported continuously to the Commander-in-Chief.

At about a quarter to five the Commander-in-Chief, adjudging that the Duke of York had reached a position from which she could engage the enemy, ordered the Belfast to indicate the position of the enemy with a star shell. The Belfast did so, and the Duke of York, which was then in a position on the starboard beam of the Scharnhorst, turned to the southward on to a parallel course. At 4.49 p.m. the Duke of York illuminated the Scharnhorst with a salvo of star-shell at a range of some 11,000 or 12,000 yards, and one minute later opened fire on her with broadsides of ten 14-inch guns as well as her own secondary armament of 5·25-inch guns, while the Jamaica joined in with her broadside of twelve 6-inch guns. It was not until ten minutes later that the enemy opened fire in reply, but from then on the action was continuous for nearly two hours. The Scharnhorst was hit very early in the action, but for some time, although the 14-inch shells that were hitting her from time to time must have been doing heavy material damage, all her guns remained in action and her speed was apparently unaffected. The Duke of York was repeatedly straddled by the enemy's fire, but was so skilfully manœuvred by her captain that she escaped any serious damage.

The Scharnhorst's fire was deliberate, and her speed proved to be far higher than the 27 knots published by the German Government. Moreover, the fact that she was able to maintain her high speed in a seaway which appreciably slowed up the British cruisers, seems to indicate that she was really of substantially greater displacement than the 26,000 tons similarly stated. When engaged by the Duke of York she turned away to the eastward, presenting an end-on target which, in the darkness, was difficult to see or hit, and rapidly opening the range. From time to time she yawed to bring her forward turrets to bear, fired a broadside, and then turned away again. So high did her speed prove to be that in the heavy sea, the destroyers were unable to get ahead of her into an attacking position.

By 6.24 p.m. she had succeeded in opening to beyond effective range, and the Duke of York consequently ceased fire. But then the hits the German ship had received, particularly those on the waterline, began to tell and she was compelled to slow down to about 20 knots. That was the destroyer's chance, which enabled them at last to get ahead ; they did so, then turned in to the attack, pressing it home to a range of less than 2,000 yards before firing torpedoes, in spite of the undiminished fire of the 12 5·9-inch guns of the enemy's secondary armament. The Savage —Commander Meyrick, the divisional commander—and Saumarez attacked on her starboard now, the Scorpion and the Norwegian destroyer Stord to port. The Norwegian ship went right in to some 500 yards, so that all who saw her thought it impossible she could survive the hail of shell aimed at her. But one hit on the Saumarez, which caused damage to upper works, and 21 casualties, was all the Scharnhorst's 5·9 gunners could make, while more than three torpedoes got home on her hull.

That slowed her up and sealed her fate, though all her guns were still firing at the destroyers when at 7·1 p.m. the Duke of York again came in range and opened fire with her 14-inch guns. In another 20 minutes the Scharnhorst was on fire fore and aft, every gun silenced, and she was almost stopped. At 7·32 the Duke of York ceased fire and the Commander-in-Chief ordered the cruiser and destroyers to sink her with torpedoes. The Belfast and Jamaica attacked from one side and the Vice-Admiral's four destroyers—which had not hitherto been in action—from the other. Hit by a shoal of torpedoes the Scharnhorst sank not far from the North Cape, while the British destroyers picked up 36 survivors out of her company of more than 1,500.

On the next day, December 27, there was another engagement far to the southward. A Sunderland flying boat of the Coastal Command, on patrol in the latitude of Bordeaux some 700 miles out, sighted a fast modern ship of some 5,000 tons steaming at about 15 knots due eastward. She was well armed with guns forward, amidships and aft, and from the first there was no doubt of her character ; she was clearly a blockade-runner. On receipt of the aircraft's reconnaissance report the nearest warships—H.M. cruisers Glagsow and Enterprise—were ordered to intercept, and an air striking force of bombers was also sent to the attack.

The cruisers would seem not to have been within easy reach, for the striking force did not wait for them before making their attack, in spite of the heavy A.A. armament of the enemy ship. The first to attack was a Sunderland, which was damaged by A.A. fire on the run in, but nevertheless pressed home the attack, though it only achieved a near miss. Later a Liberator hit the stern of the enemy ship with a bomb which would seem to have reached the magazine. It caused a tremendous explosion and the ship burst into flames which rapidly spread along her length. The crew of about 70 abandoned her in boats, she burned out and sank later in the day. Survivors were landed a few days later in Eire.

At dawn the next day, about 200 miles eastward from the position in which the blockade-runner had been sunk, a reconnaissance aircraft sighted 11 German destroyers steaming westward, evidently sent out to escort in the ship which by that time, though they apparently did not know it, had already been sunk. Five of them were of the Narvik class, mounting five 5·9-inch guns; the other six were of the Elbing class, mounting four 4·1-inch guns each. Again the Glasgow and Enterprise were summoned to the spot and they made contact with the enemy from the north-eastward in the early afternoon. The Glasgow's broadside consists of twelve 6-inch guns; that of the Enterprise, of six 6-inch guns. The five Narvik class with the six Elbings thus had a material superiority in gunfire of about five to two.

For an hour the enemy flotilla fled to the south-eastward, pursued by the British cruisers, but were unable to get away, presumably because the sea was high enough to slow them up. By the end of that time, a number of them had been hit, though the only hit on the British ships was one on the Glasgow which caused slight damage and a few casualties. The Germans then split up into groups and scattered. The Glasgow and Enterprise could pursue but one group of four destroyers which steered to the northward. The cruisers chased them until dusk, by which time three of them had been sunk; only the fourth, severely damaged, got away.

The Luftwaffe tried to take a hand now and then, but Coastal Command Beaufighters and Mosquitos gave fully effective cover. At least one Heinkel was shot down and all others driven away, though one Beaufighter was lost. A number of Coastal Command bombers also took a hand and made many attacks on the enemy ships, but it was not reported whether any of them were effective. One Halifax was lost in the course of the two days' operation.

In the narrow seas, on December 10, a British coastal force attacked an enemy convoy off Ijmuiden and torpedoed one ship in it. On December 23, the British shore guns in the Dover area opened fire for over an hour on an enemy convoy creeping through the Straits along the French shore under cover of mist. It was not known if any hits were made.

MEDITERRANEAN.

On December 1 the submarine base at Marseilles and the harbour works under construction in connection with it were bombed by the North-West African Strategic Air Force. Light naval forces continued to operate in support of both flanks of the Army. On December 2 in the Adriatic two destroyers bombarded the road between Pescara and Guilianova, hitting a bridge over a valley. That night two destroyers bombarded Ancona and San Benedetto, sinking three coastal craft and damaging two others. A few hours later other destroyers sank a small coaster in the same area. In the Tyrrhenian Sea on December 20 American patrol boats met and engaged two German destroyers near Elba. The enemy broke off the engagement and retired, to be engaged by a mixed force of British and American light craft which intercepted them. One enemy destroyer was believed to have been hit by torpedoes, but this was not confirmed. In the Adriatic the same night British light forces sank one landing barge, an escort ship and two motor-boats. On Christmas Day it was announced that the Yugoslav cruiser Dalmatjia, which was in German hands, had been torpedoed and disabled by British light craft somewhere in the eastern Adriatic. On December 30 it was again the turn of American patrol boats, which torpedoed and sank two enemy armed trawlers in the Gulf of Genoa.

More submarine successes were announced by the Admiralty on December 6, chiefly in the Ægean. 17 ships in all were sunk, most of them small; some of them were carrying ammunition to island garrisons.

SOUTH-WEST PACIFIC.

There were no notable developments in the situation in Bougainville during the month. The Japanese garrison in the north and east of the island, however, were practically cut off from support and those of them who had an opportunity ot trying to get away seized it.

But the establishment in the preceding month of a strong American force there, and their construction there of the necessary airfields, made it possible to continue the Allied advance overseas without waiting for the complete reduction of the Japanese forces in this, the last of the Solomons positions to be held by them. On December 14 heavy air attacks were made on Arawe, on the south coast of New Britain, half-way between Gasmata and the western end of that island. This position is almost opposite Finschaven, on the New Guinea side of the Vitiaz Straits and less than a hundred miles away, and it was therefore possible to give air support to the landing from the Allied airfield to New Guinea. The next morning troops were landed at and near Arawe at three separate points. There was substantial opposition in some positions but a foothold was quickly secured and extended in both directions along the coast. The Arawe airfield was captured on December 19, four days after the first landing, and from that time on the weight of the American attack was transferred to the Japanese positions round Cape Gloucester, on the north side of the western extremity of the island. At the same time the steady advance by the Australian troops in the Finschaven area enabled full air support to be given over the whole of the Vitiaz Straits.

On December 26 Japanese positions at Cape Gloucester were heavily bombarded from the sea at 6 a.m., an attack which was succeeded by an equally heavy bombardment from the air up to about 7.45 a.m. As soon as it ended, American Marines landed without opposition on both sides of Cape Gloucester. There was some Japanese resistance in the air, and one destroyer, U.S.S. Brownson, was sunk and three other ships slightly damaged. 61 Japanese aircraft—36 bombers and 25 fighters—were destroyed for a loss of 7 American aircraft with others damaged. Both these landings in New Britain were examples of well-planned and skilfully executed amphibious operations. By December 30 the Marines had captured both the Japanese airfields in the area, against what was described as " considerable resistance." The capture of the airfields gave the Americans complete air control of the whole area of western New Britain and the Vitiaz Straits, and made possible the further extension of their control of New Britain in the New Year.

The attacks on the Japanese concentration at Rabaul, and on their subsidiary assembly point at Kavieng in New Ireland, were continued without intermission. On December 3 a large Japanese transport full of troops was sunk by bombs off Kavieng and two Japanese destroyers and a tanker were hit. Some Japanese ships were sunk in the Rabaul area on

December 27, and on that day and the following day 35 enemy fighters were shot down over that port.

CENTRAL PACIFIC.

The establishment of United States Forces in the Gilberts during November enabled the weight of air attack to be extended to the Marshall Islands and beyond. The principal Japanese positions in that group—Kwajalein and Wotje atolls—were bombed on November 31 by Army aircraft from the Gilberts, and on December 4 by naval aircraft from a task force commanded by Rear-Admiral Pownal. In the second attack 72 Japanese aeroplanes were shot down besides a large number destroyed on the ground. At Kwajalein two light cruisers, an oiler, and three cargo transports were sunk; three other transports were damaged as well as one at Wotje. The Japanese, in their report of the affair, claimed to have sunk an aircraft carrier and a cruiser and to have damaged another ship of each class. Actually there were no American losses.

On December 8 another task force under Rear-Admiral A. W. Lee went west from the Gilberts and attacked the lonely island of Nauru, on which the Japanese had established a bomber airfield. Air attacks on the Marshalls were repeated later in the month by Army Air Forces. Maloelap atoll was bombed on December 19 and Nauru again on December 27.

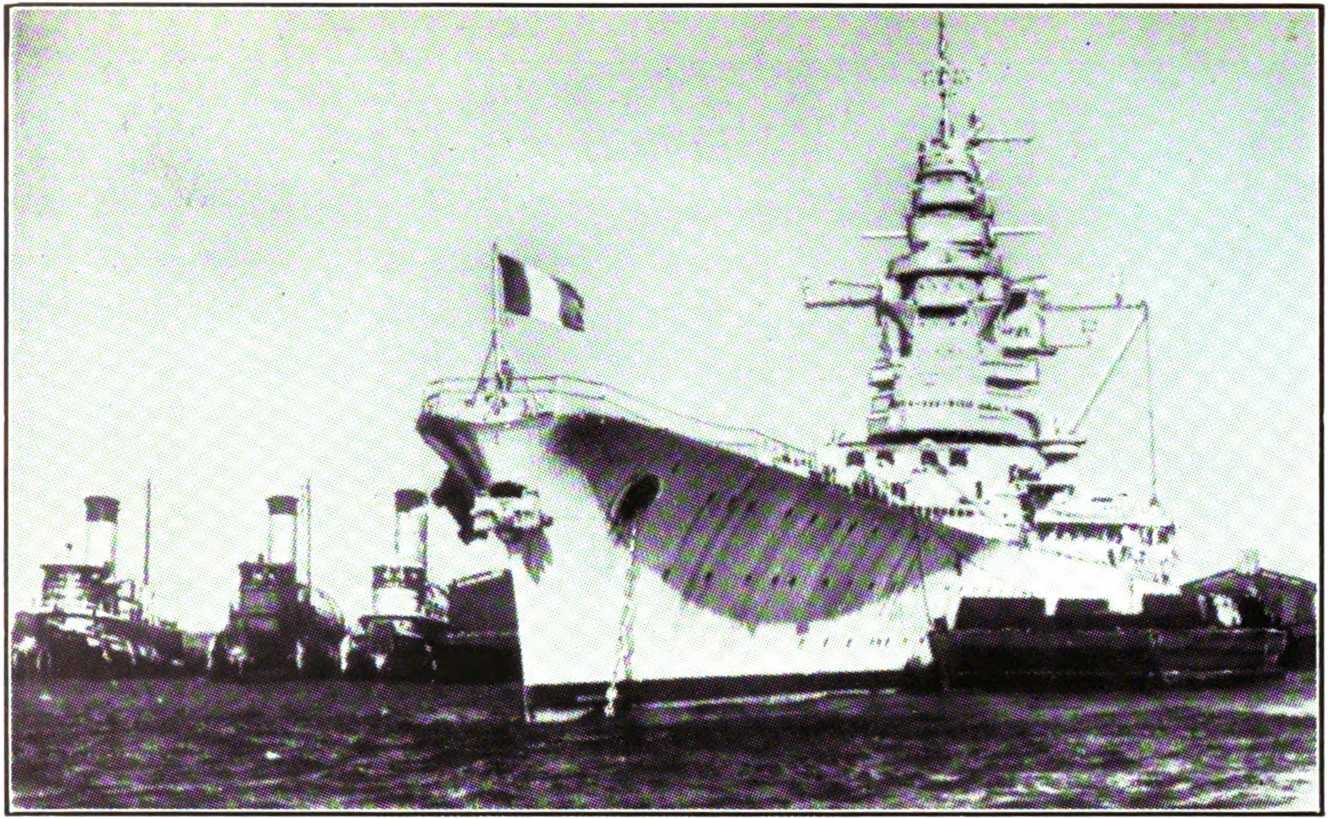
Action by United States submarines in the Pacific was announced from time to time. On December 6 their sinking of 11 Japanese ships was reported, on December 17 the destruction of eight more and on December 28 that of twelve more, including one destroyer. Most of the ships destroyed were either tankers or large transports. The loss of the submarine U.S. Wahoo was announced on December 2. The Japanese naval base of Paramushir, in the Kurile Islands, was attacked from the air by American forces on December 31. It was understood that the attack was carried out by the U.S.A.A.F. working from the Aleutian Islands.

LOSSES.

During the month, the loss was announced of the destroyer Hurworth and an armed trawler.

H. G. T.

American amphibious vehicles landing troops on Emirau Island.



French Battleship Richelieu at New York.

CHAPTER II.

FOREIGN NAVIES.

TONNAGE added to the Allied Navies in 1943 exceeded anything previously recorded, as will be illustrated by figures quoted later in regard to American construction. German efforts continued to be concentrated on submarines, but with the notable difference, as compared with the preceding year, that it is decidedly doubtful whether the number built sufficed to meet the casualty rate. This improvement in the Allied situation at sea must have seriously disconcerted the enemy, the more so as it had been announced from Berlin at the beginning of the year that the U-boat campaign against shipping was to be intensified to an extent that would bring speedy victory to the Axis. Unquestionably a very heavy attack had been prepared, but its delivery happened to coincide with a great increase in the number of escort vessels of all types, including aircraft carriers. By the aid of the latter, the mid-Atlantic gap between the extreme ranges of shore-based planes on either side was successfully bridged. Thus the expected blow was not only parried, but returned with such vigour that the number of U-boats destroyed in 1943 is believed to have exceeded the total for the whole period from August, 1914 to November, 1918.

In the Far East during 1943 the Japanese ceased to be the aggressors at sea, being forced to adopt a defensive attitude. In that role their chief characteristic has been a dogged refusal to surrender which, if persisted in long enough, may make some contribution towards solving the problem of over-population, so often advanced by the Japanese in the past as an excuse for the seizure of fresh territory.

In warships the Allies' losses were less severe than in any of the three preceding years. During the year the loss was reported officially by the British, United States and other Allied Navies of three cruisers, one escort aircraft carrier, two fast minelayers, 32 destroyers, 29 submarines, 11 ocean-going escort vessels and six fleet minesweepers. Our enemies, on the other hand, suffered much more heavily in proportion to their relatively limited resources. Apart from the Italian Navy's submission, the Germans lost their only remaining seaworthy battleship and Japanese cruiser squadrons and destroyer flotillas were further depleted.

In the Western sphere, the engagement in which the Scharnhorst was sunk on Boxing Day was the outstanding naval action. In its earlier stages H.M.S. Belfast, Norfolk and Sheffield emulated the three cruisers at the Battle of the Plate, and like them, found the enemy disinclined to come to close quarters. Ultimately the German ship was battered into a state of helplessness by H.M.S. Duke of York, and her destruction completed by torpedoes, very much as in the case of the Bismarck.

A number of hotly contested actions were fought against U-boats in the Atlantic during the year, with results unfavourable to the enemy. Co-operation between H.M. ships and the aircraft of the Fleet Air Arm and Royal Air Force was carried to a high degree of efficiency, and the presence on each occasion of an ample air escort had much to do with the successful issue of most of these encounters.

In the Pacific there were five naval actions of importance between Allied and Japanese forces in the Solomons area last year: one in February, two in July, one in August and one in October. Frequent air attacks were delivered on enemy bases such as Rabaul, Kavieng, Madang and Wewak, and counter-attacks on Guadalcanal and other islands occupied by the Allies. In all these encounters the Japanese had decidedly the worse of it, the United States Navy losing a couple of cruisers and seven destroyers against Japanese losses in the same period estimated at 16 cruisers and 47 destroyers.

In the Aleutians the islands of Attu and Kiska were both regained, the former being taken by storm by the United States Army with naval backing, and the latter evacuated by the enemy after repeated bombardment.

UNITED STATES.

American naval expenditure in 1943 exceeded that for the preceding year. For the fiscal year 1944 (running from July 1, 1943, to June 30, 1944) the total appropriation approved was $27,463,687,198, a record figure. No less than $9,118,120,000 of this was for new naval construction. Aviation accounted for $4,583,725,000, ordnance and ordnance stores for $3,476,800,000, and maintenance of ships for $1,735,880,000. The Marine Corps was allotted $1,002,691,484 and the Coast Guard $467,756,760.

Combatant ships (exclusive of vast numbers of ancillary vessels) completed during 1943 totalled 1,600,000 tons. This almost doubled the tonnage which existed at the beginning of the year, and was nearly three times the tonnage completed during 1942.

Personnel has expanded in pace with this immense output of new ships, and at the end of the year had reached the remarkable total of 2,294,000 officers and men for the Navy ; 399,700 for the Marine Corps ; and 171,500 for the Coast Guard. These figures include the personnel of the Women's Reserves, known as " Waves " in the Navy and " Spars " in the Coast Guard, but do not take into account the Navy Nurse Corps or men enrolled under the V12 training scheme.

BASES, SHORE STATIONS, ETC.

From July 1, 1940 to June 30, 1943, a total of $8,100,000,000 of facility construction work, including the cost of machinery and equipment, the entire floating dry dock programme, and advance base facilities, was scheduled and committed for by the Navy. The value of work actually carried out during this period has amounted to $6,500,000,000, or 81 per cent. of the work scheduled. This programme may be subdivided into two divisions, industrial and non-industrial. Industrial facilities scheduled amounted to $3,200,000,000, of which 81 per cent., or $2,600,000,000, was complete by July 1, 1943. Sixty per cent. of these industrial facilities were for shipbuilding and repair, the other 40 per cent. being divided about equally between ordnance and aircraft. In the second division—non-industrial—the amount of work scheduled since July 1, 1940, was $4,800,000,000, of which also 81 per cent. had been completed by July 1 last. Almost 30 per cent. of the money spent for non-industrial facilities has been for naval aviation shore requirements, these making up the largest single sub-division in the non-industrial facilities programme. Other sub-divisions in order of importance were : advance bases, structures for naval personnel, storage, ordnance depots, fleet facilities and miscellaneous facilities. Of these various subdivisions, only the advance base programme was less than 75 per cent. complete on July 1, 1943. Of the construction completed by July 1 last, about £4,600,000,000 comprises the Navy's direct shore construction programme. Work on this has proceeded five times as fast as normal peacetime construction. In fact, this entire programme has progressed as rapidly as the fastest of the peacetime projects.

Before the war it took three to four years to build a new naval air station. In fact, the Alameda Air Station, in California, required 39 months to complete; and the Kaneche Air Station, in Hawaii, begun in 1939, was 19 months building. In 1940, however, construction had been so speeded up that the Corpus Christi Air Station, Texas, was completed in eight and a half months. After the outbreak of war, in 1942, the Hutchinson (Kansas) and Norman (Oklahoma) airfields were rushed through in two and a quarter and two and three-quarter months, respectively; Memphis, Tennessee, with 4,000,000 cubic yards of earth to be removed, took four months, and Barbars Point, in Hawaii, eight months.

Recent additions to the list of naval air stations have been Patuxent, at Cedar Point, Maryland, and Houma, 55 miles south-west of New Orleans. The former serves as the East Coast terminal for the Naval Air Transport Service, and has relieved flying and operating aspects of experimental work previously conducted at Anacostia and Norfolk. It has facilities for both aeroplanes and seaplanes. Docks have been constructed to handle cargo in connection with the activities of the air transport unit. Houma N.A.S. cost $10,000,000, and was designed as a base for lighter-than-air craft. This is a part of the plan to defeat the submarine menace in this quarter, the " blimps " operating from Houma (as well as from Miami, Fla.; Brunswick, Ga.; and Hitchcock, Tex.) being detailed to protect shipping in the Gulf of Mexico. Additional auxiliary air stations have also been placed in commission. There are now five of these, Bronson, Barin, Corry, Ellyson and Saufley. All are named after naval officers, and are used for training.

Large graving docks, in which battleships and cruisers can be overhauled, are one of the most difficult shore installations to construct. Prior to Pearl Harbour, these docks averaged 50 months each to build. Since then, the average has been cut to 22 months.

Construction of floating dry docks, some of them capable of taking the largest battleship, began late in the Defence Programme. In the first half of 1942 docks with a lifting capacity of 6,000 tons were completed; a year later, in the first half of 1943, docks turned out had a lifting capacity of 255,000 tons.

Steel sectional floating pontoons are a new development of amphibious warfare. At invasion points they can be used as lighters or fuel barges; or they can be coupled into piers, bridges, dry docks and other waterside facilities. In the first half of 1941 the Navy produced 1,920 pontoons. Two years later, during the first half of 1943, fourteen times as many—27,924—were completed. In all 84,361 had been produced up to July last.

Near Red Bank, New Jersey, an 8,400-acre site has been selected fo an ammunition depot to cost $14,000,000. It will furnish munition storage and transhipment facilities for naval units operating, fitting ou or being refitted in the New York area.

SHIPBUILDING PROGRESS.

All over the United States, on the Great Lakes and important rivers as well as on the sea coast, shipbuilding facilities continue to expand to meet the requirements of the Navy and the Maritime Commission. As a result, fresh records in speed of construction have been set up in various directions. The 45,000-ton battleship New Jersey was built and delivered complete in 33 months, as compared with 45 months for the 35,000-ton Washington before the war. The 27,000-ton aircraft carrier Yorktown was built in 20 months as compared with nearly 46 months required for the carrier Enterprise, a vessel of 19,800 tons completed in May, 1938. The heavy cruiser Wichita, of 9,324 tons, had taken 41 months to build when she was completed in 1939, whereas the Boston, of 13,000 tons, completed in 1943, was built in 24 months. The light cruiser Helena (1939) was built in 36 months; the Biloxi (1943), of the same displacement, in less than 26. The destroyer Niblack, turned out in August, 1940, required 24 months; the Gatling, completed in November, 1942, took seven and a quarter. Between the Drum in 1941 and the Aspro in 1943, submarine construction time was cut 43 per cent. The type which the Navy has produced in the largest numbers is the destroyer escort, corresponding to the British frigate of the "Captains" class. Some hundreds of these vessels have been built. To complete the first ten of them at the Bethlehem-Hingham and Consolidated Steel yards required an average of 302 days each. For the most recent ten from the same yards, the average was 206 days, a reduction of nearly one-third.

This speed has not been achieved by an extravagant expenditure of labour, as is sometimes imagined. Yards building ships for the U.S. Navy have made substantial reductions in the labour which they require to build a vessel. The New York Shipbuilding Corporation, an old-established concern with long experience in building cruisers, has reduced the man-hours needed to build a ship of this category by 25 per cent. The light cruiser Cleveland, completed in June, 1942, required 7,600,000 man-hours. The light cruiser Santa Fé, completed in November, 1942, required only 5,700,000 man-hours, a saving of 1,900,000. One of the most efficient of destroyer builders is the Bath Iron Works Corporation. Between the destroyer O'Bannon, completed in June 1942, and the De Haven, delivered in September of the same year, the Bath Iron Works cut the man-hours required from 1,600,000 to 1,150,000, a reduction of 28 per cent. The Consolidated Steel Company has reduced by 34 per cent. the man-hours which it requires to build destroyers. The Bethlehem Steel Company's yard at San Pedro, California, has reduced its destroyer man-hours by 21 per cent.

Landing craft construction was a novelty for all the shipyards which embarked on this programme early in 1942. A large infantry landing craft completed by George Lawley & Sons in October, 1942, required 155,000 man-hours to build, whereas a similar craft completed by the same establishment only two months later had been cut to 84,000 man-hours, a saving of 46 per cent.

BATTLESHIPS.

The two first ships of the 45,000-ton class, the Iowa and New Jersey, were completed in March and June, 1943, respectively. Of the remaining four of the class, two, the Missouri and Wisconsin, have since been launched and will doubtless be delivered during 1944.

Practically all American battleships have had their anti-aircraft armaments augmented as the result of experience gained in the South-West Pacific. In addition to the secondary armament of twenty 5-inch, 38 calibre, dual purpose guns, the eight most modern battleships are reported to carry well over a hundred lighter pieces, mostly 40-milimetre Bofors and 20-mm. Oerlikons. In the case of ships disabled at Pearl Harbour and since reconstructed, such as the West Virginia and California, it is probable that a similar degree of rearmament has taken place, judging from official photographs which have appeared in the Press. All the older battleships from the Nevada to the Maryland class, inclusive, now appear to mount sixteen 5-inch, 38 calibre, guns as their secondary armament. Doubtless other alterations to increase their battle-worthiness have also been carried out, though these may not all be perceptible from photographs. Even the Arkansas, oldest U.S. battleship in commission, having been launched 33 years ago, has undergone some modernisation, her cage foremast having been replaced by an up-to-date tripod structure.

Two of the six battle cruisers ordered in 1940, the Alaska and Guam, were launched last year. No definite information concerning the progress made with the remaining four has been made public, though a year ago it was rumoured that their construction had been suspended to enable material and labour to be devoted to other ships more urgently required.

AIRCRAFT CARRIERS.

It was stated officially by the Under Secretary of the Navy, Mr. James V. Forrestal, in January, 1944, that 65 aircraft carriers were completed during the preceding year. Six of these were of the 27,000-ton Essex type ; nine were intermediate carriers of the 10,000-ton converted cruiser design ; and the remaining 50 were escort carriers.

Though a complete list of the escort carriers has not so far been furnished, the two former groups can be easily identified as the Yorktown, Intrepid, Hornet, Lexington, Bunker Hill and Wasp, of the Essex class ; and the Independence, Princeton, Belleau Wood, Cowpens, Monterey, Cabot, Langley, Bataan and San Jacinto, of the intermediate type. Escort carriers delivered in 1943 are believed to include the Breton, Casablanca, Corregidor, Guadalcanal, Natoma Bay, Midway, Kansaan Bay, Tripoli, and Wake Island, as well as the Liscombe Bay, lost during the Gilbert Islands operations last November. Apparently all are a trifle under 10,000 tons displacement, judging from dimensions published. When the above 64 vessels (deducting the Liscombe Bay) are added to the Essex, Enterprise, Ranger and Saratoga, together with an estimated previous total of 18 escort carriers, already complete at the end of 1942, it will be realised that the United States Navy was able on January 1, 1944, to dispose of 86 aircraft carriers. Five more of the 27,000-ton fleet type, the Franklin, Hancock, Bennington, Ticonderoga and Shangri-La, are in the completing stage, and many more of the escort type, including the Tulagi, Fanshaw Bay, Nehenta Bay, Hogatt Bay, Kadashan Bay and Petrof Bay, must be in service by now. In fact, by this time there are probably over 100 carriers of all types available.

Further bad news for the Japanese was given last October, when it was revealed that three aircraft carriers of special design, displacing

45,000 tons, had been ordered for the U.S. Navy. These will be faster and more thoroughly subdivided than earlier carriers, and will be equipped with exceptionally large bombers, involving a total weight of aircraft 50 per cent. greater than in the Essex type.

CRUISERS.

Of the heavy cruisers of the Baltimore class, displacing 13,000 tons, four have been launched and are probably in service by now: the Baltimore, Boston, Canberra and Quincy. At least nine more are under construction, the Albany, Columbus, Des Moines, Rochester, St. Paul, Chicago, Los Angeles, Northampton and Pittsburgh.

Four or five more 10,000-ton light cruisers of the Cleveland class appear to have been completed last year. These were the Biloxi, Houston, Astoria, Vincennes and Miami. Three others, the Pasadena, Vicksburg, and Wilkes-Barre, were launched in 1943. At least twenty more are under construction.

The 6,000-ton light cruiser Reno was delivered last year, and it is believed that six more of the class, including the Spokane, Tucson, Atlanta and Juneau, are building or completing. Contracts for three of these ships, which were originally allotted to the Bethlehem Steel Company's Union plant at San Francisco, were re-assigned on October 30 last to the Federal Shipbuilding and Dry Dock Company, Kearny, N.J. At the same time the contracts for two 10,000-ton cruisers, the Cheyenne and Duluth, originally to have been built by the Federal Company, were transferred to the New York Shipbuilding Corporation.

DESTROYERS.

Construction of destroyers during 1943 proceeded even more rapidly than in the preceding year. No complete record has been made available as yet, but from Press reports it is clear that the number launched must have approached 100, and probably exceeded that figure. Fully as many were completed. They included units of the 2,100-ton Fletcher class and of the 1,700-ton Ellyson class, with others belonging to more recent programmes. Most of the last-named are believed to be of an improved Ellyson type, but some are of a new and larger design, reported to be of 2,200 tons displacement, with exceptionally heavy armament and of greater speed and radius of action than any destroyers previously constructed. It is stated that they will be employed as "flagships of destroyer squadrons."

Contracts for 305 destroyers, which had not actually been laid down, were cancelled in November, 1943, in view of the improved position in the Atlantic.

SUBMARINES.

The launching of over 50 submarines was reported during 1943. All are believed to be of the standard 1,525-ton type, which has done such good service in sinking Japanese ships in the Pacific. Losses in the twelve months numbered eleven, which may be taken as evidence that Japan is short of anti-submarine vessels.

ESCORT VESSELS.

Particulars published of the " destroyer escort " type show that it is not a destroyer, as that term is usually understood ; in fact, British ships of a similar design are classed as frigates. With a displacement of about 1,300 tons, and a speed of about 20 knots, these vessels mount an armament of three 3-inch dual purpose guns, two 40-mm. Bofors' and four 20-mm. Oerlikons, besides depth-charge throwers. Some have turbo-electric propulsion, some Diesel, and others triple expansion engines. There would appear to be at least 700 of these useful little craft in service or under construction.

A group of 81 twin-screw vessels rated as frigates are reported to be of 1,015 tons. All are named after American towns. There are also an unstated number of corvettes in service ; some were transferred from the Royal Navy, e.g. the U.S.S. Surprise, formerly H.M.S. Heartsease, while others have been built on the western side of the Atlantic.

Under the 1942 programme 600 submarine chasers, two-thirds of them of the steel PC type and the remainder of the wooden SC design, were built. Last year 100 steel chasers of an improved type, distinguished by the prefix PCE, were launched, together with a number of enlarged wooden craft lettered PCS. The latter are reported to be similar in dimensions to the coastal minesweepers of the YMS series. In November, 1943, contracts for 110 steel submarine chasers, none of which had been begun, were cancelled in order that the labour and material might be devoted instead to the construction of landing craft.

OTHER SHIPS.

A considerable number of additional minesweepers, of the Raven, Adroit and YMS types, were built last year. So far the highest distinctive numeral reported for the last-named class is YMS 456.

More motor torpedo boats have also been turned out ; this type has proved its usefulness in the Mediterranean as well as in the Solomons campaign.

A new seaplane tender of large size, under construction at the Seattle-Tacoma Shipbuilding Corporation's yard at Seattle, is to be named Whiting, after the late Kenneth Whiting. The seaplane tender Currituck, of 8,625 tons, which was to have been built by the Los Angeles Shipbuilding and Dry Dock Corporation, was launched last year by the Navy Yard at Philadelphia instead.

New destroyer tenders launched or completed during the year were the Cascade, Piedmont, Sierra, Yosemite, Appalachian, Blue Ridge and Rocky Mountain. The submarine tender which was to have been named Neptune was launched in September, 1943, as the Howard W. Gilmore, having been renamed in recognition of the gallantry of the submarine captain of that name, who gave the order for his vessel to dive in emergency regardless of the fact that he himself could not regain the conning tower in time.

New oilers launched in 1943 included the Caliente, Cacapon, Chikaskia, Louisburg, Millicoma and Ocklawaha. Store and cargo ships, the launching of which was reported, were the Achernar, Alcadia, Aquarius, Centaurus, Cepheus, Media and Thuban. Transports launched were the Admiral W. S. Benson, General Anderson, General Harry Taylor, General

Henry W. Butner, General William Mitchell, General William A. Mann General William F. Hase, Marine Robin, Fremont and Wood. Most of these appear to be of about 13,000 tons gross, but the Admiral W. S. Benson is of a new and enlarged type, of 17,000 tons gross. Several more old flush-deck destroyers, including the Bernadou, Cole, Dent, Waters and Dallas, have been refitted as fast transports. Two new hospital ships, the Hope and Mercy, were launched.

Additional fleet tugs, rescue vessels, net tenders and other auxiliaries have also been added to the fleet; and landing craft have been delivered in immense numbers.

NAVAL AIR SERVICE.

In the eighteen months between January 1, 1942, and July 1, 1943, production of naval aircraft quadrupled. In the twelve months of 1942, production of naval combat planes doubled and redoubled. Then in the first six months of 1943 it approximately doubled again. No other portion of the great American aircraft programme has moved ahead so swiftly. In the 36 months between July 1, 1940, and July 1, 1943, the Navy completed 15,567 aircraft of all types, excluding planes turned over to the Navy after being built under Army cognisance. Their combined airframe weight is nearly 64,000,000 lb. In addition to the 15,567 Navy-built planes, the Navy has received during the three years about 8,300 aircraft built under Army cognisance, of which 7,800 were training and utility planes and 450 combat aircraft. To have replaced the naval aircraft lost at Midway would have required half a year at the 1940 rate of production. By June, 1942, when the battle was fought, the losses could have been made up within two weeks. Now they could be restored in less than four days.

It will be observed that the Navy has concentrated on combat planes, obtaining most of its other types through the Army. Against the 1,598 naval combat planes produced in the year 1941, a total of 1,911 was delivered in the first half of 1942. The entire production for the year 1942 was exceeded in the first half of 1943. So steep, in fact, has been the rise in naval combat plane production that deliveries in the single month of June, 1943, account for ten per cent. of all the aircraft turned out in the three years between July 1, 1940, and July 1, 1943. These naval combat aircraft range from big four-engined patrol bombers to fighters. Recent emphasis has been on bombers. Torpedo bomber production in the first half of 1943, for example, was larger than during the preceding 30 months of the Defence Programme combined. Production of dive-bombers and patrol bombers in the first six months of 1943 was approximately equal to the total production in the preceding two and a half years.

One of the special achievements deserving of mention has been the production of a new carrier-based fighter, inspired by war experience, and capable of matching the world's best land-based fighters in its performance. Contracts for the first two experimental Navy Hellcats were let in August, 1941, and the first production contract was signed December 4, 1941, three days before Pearl Harbour. As its production proceeded, lessons of the war were embodied in the design, and the first Hellcats were ultimately delivered late in 1942. In the first six months of 1943, monthly production multiplied eighteen times over the total 1942 delivery.

Rear-Admiral John S. McCain was appointed last August to the new post of Deputy Chief of Naval Operations for Air, with the rank of Vice-Admiral. This new office has been created for " the purpose of facilitating the handling of expanding naval aviation, particularly with regard to policy, plans, personnel and logistics." His duties will be to correlate and co-ordinate all military aspects of naval aviation within the Navy Department, while the Bureau of Aeronautics will continue to deal with the design, procurement and upkeep of aircraft and aircraft equipment.

Rear-Admiral D. C. Ramsey, previously a task force commander in the Pacific, has succeeded Vice-Admiral McCain as Chief of the Bureau of Aeronautics. Both officers are airmen.

Captain Charles E. Rosendahl, the Navy's leading authority on lighter-than-air craft, was promoted to rear-admiral on May 13 and placed in charge of the new training command for airship personnel at Lakehurst. Its activities will also include the airship training centre at Moffett Field, California.

NAVAL ORDNANCE.

A modern battleship's anti-aircraft fire power is one hundred times what it was three years ago. New naval fighter planes fire in one minute five times the weight of projectiles that their predecessors of 1940 fired. Naval ordnance production, therefore, has filled a compound demand: arming an unprecedented number of new ships and aircraft, and arming each to an unprecedented degree. In addition, it has rearmed the fleet that already existed and much of the mercantile marine.

To meet these demands, more than $2,500,000,000 worth of naval guns and mountings, ammunition, torpedoes, mines, depth charges, bombs and fire control devices have been produced since July 1, 1940, an output without parallel in naval history. The rate of production has increased twenty-four-fold. From $46,000,000 in the last six months of 1940, production of these important items soared to more than £1,000,000,000 in the first six months of 1943. Like ship completions, ordnance production in each six months has surpassed the record of the preceding twelve months. Against a figure of $275,000,000 produced in the whole of 1941, $378,000,000 was produced in the first half of 1942. In turn, the 1942 total of $1,086,000,000 was surpassed in the first half of 1943, when production rose to $1,099,000,000.

Four main subdivisions make up more than three-quarters of the naval ordnance production programme, viz., guns and mountings, including fire control; ammunition; torpedoes, mines and depth charges; and bombs, fuses and aviation fire control. Nearly half of the $2,500,000,000 spent on the four major naval ordnance items has been for gun and mounting assemblies. Their production increased 130 per cent. between the first half of 1942 and the first half of 1943, rising from $208,000,000 to £482,000,000. By the first half of 1943, four items made up 97 per cent. of the dollar value of total gun and mounting production. These were the 20-mm. and 40-mm. anti-aircraft guns, the 3-inch 50 cal. dual purpose guns, and the 5-inch 38 cal. dual purpose guns. They are the great mass-production naval guns of this war, constituting as they do the principal armament of destroyers and destroyer escorts, the two categories now being completed in the greatest numbers. They also make up the secondary and anti-aircraft batteries of battleships, aircraft carriers and cruisers. They are responsible for the tremendous anti-aircraft fire power of surface ships, which enabled the U.S.S. South Dakota and Enterprise to bring down 62 Japanese planes in the battle of Santa Cruz.

More than 66,600 of these guns, counting numbers of barrels, have been turned out since the defence programme started. Firing together, these new guns would throw 4,600 tons of projectiles per minute. The 5-inch 38 calibre dual purpose gun, a standard weapon against surface vessels and now the heaviest anti-aircraft piece, was developed by the Navy. Therefore it was in production in small volume when the Defence Programme began. Because both the 20-mm. and 40-mm. guns were new in the United States, their production was not started until 1941 and 1942, respectively. Production of dual purpose 3-inch 50 cal. guns also began in 1941. Output of each of these guns has doubled and redoubled several times. In the first six months of 1943, for example, the Navy produced almost as many 3-inch 50 cal. gun and mounting assemblies as it did in the preceding eighteen months.

Modern guns simply devour ammunition. Therefore, among the four major ordnance commitments, ammunition has become steadily more important as fighting intensifies, rising from 22 per cent. of the total in the first half of 1942 to 36 per cent. in the first half of 1943. Between the first and second half of 1942, naval ammunition production trebled in value. In the first half of 1943, production was 170 per cent. of the output in the last half of 1942. About $725,000,000 of ammunition was produced in the eighteen months to July 1, 1943. In the first six months of last year, 86 per cent. of the ammunition produced was for 20-mm., 40-mm., 3-inch and 5-inch guns. In all the Navy has received 390,000,000 rounds of 20-mm. ammunition, 23,000,000 rounds of 40-mm., 2,500,000 rounds of 3-inch and 3,000,000 rounds of 5-inch.

Perhaps the most spectacular of recent increases has been in the production of torpedoes. When the defence programme began the Navy had one torpedo plant turning out about three torpedoes a day. By June 1943, the Navy had seven torpedo plants, producing scores of torpedoes a day. Each semi-annual period from July, 1940, has shown a steady increase in torpedo output. From the second half of 1940 to the first half of 1941, production increased 64 per cent. An increase of similar amount was registered in the second half of 1941. Thereafter the rate of increase began to move up more steeply. In the first half of 1942 almost as many torpedoes were produced as in the whole of 1941, and in the second half of 1942 production shot up another 70 per cent. A sixfold increase in torpedo production between the latter half of 1940 and the corresponding period in 1942 is especially remarkable because it was the work of two plants. Throughout 1940 the naval torpedo factory at Newport, Rhode Island, was the only manufacturer. It continued to carry the bulk of the burden during the first half of 1941, as the new Alexandria plant went into production. In the ensuing year and a half these two plants pushed production up 25 per cent. The sharpest increase of all, however, came in the first six months of 1943, when five privately managed plants came into production. In that half year 19 per cent. more torpedoes were completed than in the whole of 1942, and almost three times the total for 1941. August, 1943, torpedo production was two-and-a-half times the monthly average for the first quarter of that year, and approximated the total torpedo output in the whole of the first World War.

Although armour is not one of the four major ordnance programmes discussed above, the expansion of armour plate production to match the accelerated shipbuilding programme presented exceptional difficulties, which were successfully overcome. In the first half of 1943, a total of 48,793 tons of armour was produced, just twenty times the tonnage made in the fiscal year 1940.

JAPAN.

There is no doubt that the Japanese Navy is finding itself severely handicapped by its heavy losses in aircraft carriers, cruisers and destroyers. Two battleships of the Kongo class are now known to have been lost in 1942, though only one has been admitted by the enemy.

There is reason to believe that at least two battleships of over 40,000 tons were completed in 1943, though all information on the subject is so shadowy and indefinite that it is difficult to form a decided opinion. Nor is there any clear evidence of the delivery of new aircraft carriers in the past year. There may be something in an American report that the large armoured ships to which the names Takamatu, Titibu and Niitaka were supposed to have been assigned were held up and converted into aircraft carriers, in view of the urgent need for ships of that category.

If all the losses claimed were accepted as certain, Japan would have lost 48 cruisers down to the end of 1943. At the start of the war she possessed 35, together with five obsolete cruisers of low speed rated as coast defence ships, and about a dozen other vessels classed as minelayers, etc., which might conceivably be mistaken for cruisers, especially from the air. It is difficult to suppose that something like 96 per cent. of these ships have been sunk, and it must be reckoned that a proportion of the losses claimed were probably either destroyers or auxiliaries ; but even so, there is no doubt the number of cruisers actually accounted for constitutes a crippling loss. According to an estimate made by the U.S. Navy Department after careful investigation of the evidence, it is considered that Japanese cruiser losses up to October, 1943, totalled 24.

A somewhat similar observation might be made with regard to destroyers, of which the maximum losses claimed up to December 31 last amount to 116. This would practically extinguish the entire destroyer force with which Japan began the war. The U.S. Navy Departments revised figure to October, 1943, is 62, which would have inflicted a very serious reduction in Japanese destroyer strength.

In submarines Japanese losses have not been heavy, though one sunk last year by H.M.N.Z.S. Tui is reported to have been a vessel of 2,563 tons —the largest Japanese submarine yet recorded. Possibly it was one of this type that made the voyage to Europe with supplies of vital war products for Germany over a year ago.

A new warship of unidentified type launched at Yokosuka in June, 1940, the Tugaru, is now believed to be a big minelayer.

FRANCE.

With the constitution in Algiers of the Committee of National Liberation, the organisation of the French fleet operating with the United Nations was placed on a fresh footing. M. Louis Jacquinot was appointed Commissaire for the Navy, with Vice-Admiral Collinet as Chief of Staff and Rear-Admiral Auboyneau as D.C.N.S. Vice-Admiral Michelier is in command of the fleet, and Rear-Admiral Thierry d'Argenlieu is the Senior French Naval Officer in London.

The 35,000-ton battleship Richelieu has been completely refitted at the New York Navy Yard, undergoing some slight alteration in appearance.

Further photographs of the French ships scuttled at Toulon show the battleship Strasbourg to be sunk on an even keel, with her hawsepipes awash. Her sister ship, the Dunkerque, is in somewhat deeper water, only "B" turret showing above the surface. Of the heavy cruisers, the Algérie and Dupleix have been scuttled with a very heavy list of about 45 degrees; the Foch is on a fairly even keel, but flooded to the upper deck level; and a fourth ship, the Colbert, has been badly damaged by fire. Other ships shown as scuttled include the minesweepers Chamois and Impétueuse. The small patrol vessel Dedaigneuse appears to be completely submerged. Various destroyers and other craft can be seen, scuttled and listing at various angles. It is evident, therefore, that a considerable degree of disablement must have been achieved.

On July 14 the French warships lying in the harbours of Martinique and Guadeloupe were placed at the disposal of the Allies. They comprised the aircraft carrier Béarn, of 22,146 tons; the 34-knot cruiser Emile Bertin, of 5,886 tons, fitted for minelaying; and the 25-knot cruiser Jeanne d'Arc, 6,496 tons, designed as a seagoing training ship for midshipmen and cadets. There were also the armed merchant cruisers Barfleur and Quercy.

French warships at Alexandria under Vice-Admiral Godefroy, comprising the old battleship Lorraine, the cruisers Duquesne, Tourville, Suffren and Duguay-Trouin, the destroyers Basque, Forbin and Le Fortuné, and the submarine Protée, also agreed last year to adhere to the Allied cause. Thus the major part of the French Navy that remains afloat is again operating with the fleets of the United Nations.

The cruiser Montcalm has been refitted at the United States Navy Yard in Philadelphia. Two heavy destroyers of 2,441 tons, Le Fantasque and Le Terrible, were refitted at Boston Navy Yard last year. Two which had fallen into Italian hands, the Tigre and Trombe, have now been restored to the French flag.

A British destroyer of the improved "Hunt" type, H.M.S. Haldon, is now manned by the French Navy and has been renamed La Combattante. A submarine built in England has been commissioned under the French flag and named Curie. Six vessels of the type rated in the U.S. Navy as destroyer escorts, and in the Royal Navy as frigates, have been taken over on completion from the Dravo Corporation at Wilmington, Delaware. By the French they are classed as *torpilleurs*. Names of these vessels are Algerien, Marocain, Senegalais, Tunisien, Hova and Somali.

A number of steel submarine chasers are being built by the Leathem D. Smith Shipbuilding Company at Sturgeon Bay, Wisconsin; two of them have been named Coutelas and Javelot.

ITALY.

For reasons which are obscure, no complete official list of the ships of the Italian Navy which have joined the Allies has been published. From Press reports there would appear to be over 100 vessels of different types, including the battleships Italia (*ex*-Littorio), Vittorio Veneto, Andrea Doria, Caio Duilio, and Giulio Cesare; the cruisers Giuseppe Garibaldi, Luigi di Savoia, Duca degli Abruzzi, Eugenio di Savoia, Emanuele Filiberto Duca d'Aosta, Raimondo Montecuccoli, Luigi Cadorna, Pompeo

Magno, and Scipione Africano; the destroyers Aliseo, Legionario, Velite, Artigliere (*ex*-Camicia Nera), Carabiniere, Fuciliere, Granatiere, Alfredo Oriani, Grecale, Nicoloso da Recco Euro, and Augusto Riboty; the seagoing torpedo boats Animoso, Ardimentoso, Fortunato, Indomito, Calliope, Libra, Lira, Orione, Giacinto Carini, Nicola Fabrizi and Antonio Mosto; the submarines Ammiraglio Cagni, Marea, Vortice, Brin, Atropo, Zoea, Giade, Nichelio, Platino, Alagi, Axum, Onice, Galatea, Jalea, Luigi Settembrini, Squalo, Marcantonio Bragadino, Filippo Corridoni, Ciro Menotti, Fratelli Bandiera, Vittor Pisani, H1, H2, H4 and some of the midget type; the sloop Eritrea; the corvettes Ape, Cormorano, Danaide, Fataga, Gabbiano, Gru, Minerva and Pellicano; the seaplane carrier Giuseppe Miraglia; the training ships Amerigo Vespucci and Cristoforo Colombo; the oiler Nettuno; about 20 motor torpedo boats, and several miscellaneous small craft such as trawlers, etc.

The battleship Roma was sunk by glider-bombs from German aircraft, which penetrated to a magazine, while on passage from Spezia to Malta. The cruiser Attilio Regolo, the destroyer Mitragliere and some other vessels have been interned at Mahon, in Minorca, and the minelayer Azio in a Turkish port. Another minelayer, the Lepanto, and a gunboat, the Ermanno Carlotto, were scuttled at Shanghai. When Allied troops entered Palermo they found there the new cruiser Ulpio Traiano, incomplete and considerably damaged. Presumably she has been repaired and put into service. Another cruiser of this type, the Ottaviano Augusto, capsized in port at Ancona after being heavily damaged by Allied bombers. It will be recalled that the same thing happened to the larger cruiser Muzio Attendolo at Naples in December, 1942. She is still lying on her side, stern on to a quay, according to a photograph published recently.

Apparently the only other Italian ships of importance which survive in enemy hands are the new battleship Impero, which is said to be incomplete; the old battleship Conte di Cavour, whose condition is understood to be decidedly unseaworthy; two heavy cruisers which are undergoing heavy repairs, the Bolzano and Gorizia; possibly the old colonial cruisers Bari and Taranto; and the new cruisers Caio Mario, Claudio Tiberio, Paolo Emilio, Cornelio Silla, Vipsanio Agrippa and Claudio Druso, which were under construction at Leghorn, Spezia, Genoa, Ancona and Riva Trigoso, and may still be incomplete. Very little progress is believed to have been made with the 8,000-ton cruisers Ammiraglio Costanzo Ciano and Venezia, or with the two of 4,200 tons that were building for the Siamese Navy at Trieste, though the latter pair are reported to have been renamed Brindisi and Quarto. Nothing has been heard of the cruiser Giulio Germanico, which was under construction at the Navalmeccanica yard at Castellammare, near Naples. Unless she had previously left for some other port, she must have been seized by the Allies after the Salerno landing, though it is possible that by that time she had been reduced to a wreck by shellfire and bombing.

GERMANY.

All available information goes to suggest that the German Navy is reduced to smaller proportions than was believed some time ago. Only two battleships remain afloat, one of which, the Tirpitz, has been immobilised by torpedo attack in Altenfjord, Norway; the other, the Gneisenau, is lying completely dismantled and disarmed at Gdynia, in the Baltic.

Other large ships in the Baltic are the "pocket battleships" Admiral Scheer and Lützow and the cruisers Prinz Eugen and Admiral Hipper. Presumably the smaller cruisers Nürnberg, Leipzig, Köln and Emden are also there. Nothing further has been heard of the aircraft carrier Graf Zeppelin or of her uncompleted sister ship, the Peter Strasser. It is possible that the former has been discarded and her armament used for other purposes.

A number of German torpedo craft were lost during 1943, and it is improbable that they have been replaced by new construction. How many survive it is impossible to say with any certainty, but 40 to 50 would be a generous estimate, depending to some extent on the number of French and Italian vessels that have been appropriated for service with the *Reichsmarine*. During 1940–41 a certain number of very large destroyers, reported to be well over 2,000 tons displacement, were built. Their main armament is understood to be four or five guns of 5·9-inch calibre. These are the ships sometimes referred to as the "Narvik flotilla," owing to the fact that they filled the places of the destroyers sunk in the two Battles of Narvik in April, 1940. There are also a number of smaller destroyers, classed by the enemy as torpedo boats, which have become known as the "Elbing" type from the fact that most of them were built by the Schichau yard at Elbing, in East Prussia. These vessels are of 1,100 tons, and mount four 4·1-inch guns.

It is believed that for a considerable period of last year U-boat losses exceeded replacements. In fact, the rate of construction, as the result of the damage done by bombing to such factories as the M.A.N. Diesel engine works at Augsburg, is thought to have declined during 1943, quite apart from the serious problem presented by the necessity of finding trained crews to fill the places of those who have failed to return from the Battle of the Atlantic.

In short, U-boat production has passed its peak. Efforts to retrieve the situation by rearming all submarines with high angle guns have failed to "stop the rot," and there can be no doubt that the enemy submarine campaign is on the down-grade.

Enemy motor torpedo boats have made occasional attempts to take the initiative by attacking our coastal convoys during the year, but these have been uniformly unsuccessful. German losses of such small craft in the North Sea, Channel, Mediterranean and Arctic total 33, according to Allied announcements.

U.S.S.R.

News of the Soviet Navy's activities in 1943 has been sparse. With the rout of the German armies in the Leningrad area, a number of Russian warships emerged from Kronstadt to support the Red Army's advance with their gunfire. These ships are reported to have included the old battleship Oktiabrskaya Revolutia, of 23,606 tons, and the new 10,000-ton cruiser Petropavlovsk, besides a number of destroyers. From the non-appearance of the battleship Marat it may be assumed that there is some foundation for the enemy claim that she was seriously damaged during air attacks on the naval base at Kronstadt.

In the Black Sea the port of Novorossisk has been regained, giving the Soviet fleet a base 217 miles from Sevastopol. It is remarkable that the Germans should have been able to cling so long to their positions in the Crimea, but their days there are certainly numbered.

All Soviet submarines are now understood to be known by numbers (with the class letter prefixed) instead of names, as formerly ; but in the absence of anything in the shape of an official list, this information does not carry one much farther.

According to an official American statement, a number of minesweepers, motor torpedo boats and submarine chasers have been acquired from the United States on Lease-Lend terms.

OTHER EUROPEAN COUNTRIES.

BELGIUM.

Ships manned by the Section Belge of the Royal Navy now include the corvettes Buttercup and Godetia and one or two other vessels of minor importance. The sail training ship Mercator is still in Belgian hands, having been at sea at the time of the German invasion.

BULGARIA.

The old torpedo boat Smyeli was lost by accident at Burghaz in May, 1943. It is possible also that two motor torpedo boats sunk by the Soviet Navy in the Black Sea in the following October may have been Bulgarian.

DENMARK.

Following the example of the French Navy at Toulon in 1942, the officers and men of the Royal Danish Navy made a gallant effort to break from German trammels at the end of August last. All vessels that could get to sea made for Swedish ports, and those that could not escape for the most part scuttled themselves. The coast defence ship Niels Iuel, the biggest unit in the fleet, was intercepted by enemy aircraft off Isefjord, on the Kattegat, and was sunk in shallow water. Though salvage operations have since been undertaken, it is reported that she is too badly damaged to be made seaworthy again. The slightly smaller Peder Skram was scuttled in Copenhagen harbour, together with the torpedo boats Makrelen, Söhunden and Valrossen, the minelayer Lindormen, and eight submarines. The repair ship Henrik Gerner was set on fire and burned till she sank in the harbour.

At Korsör Havn, on the Great Belt, were a minesweeper and three old torpedo boats, the fate of which is uncertain, though it has been reported that their engines were effectually wrecked. This certainly happened to the minesweeper MS3 before the Germans could interfere, while two of her sister ships were set on fire or sunk. At other places the minelayer Lossen, two minesweepers and four mining tenders were scuttled. The fishery patrol vessels Hejmdal, Ingolf and Hvidbjörnen are reported to have been sunk while attempting to escape.

Ships that apparently fell into enemy hands more or less intact were the incomplete destroyers Najaden and Nymfen ; the torpedo boat Narhvalen and the surveying vessel Freja, both of which were in dry dock ; the Royal yacht Dannebrog and the fishery patrol vessels Beskytteren and Islands Falk. Ships successful in reaching Swedish waters were the old torpedo boat Havkatten, the minesweepers MS1 and MS7, and nine motor launches. All were interned at Karlskrona. A report that the submarine Havhesten also arrived at a Swedish port appears to have been unfounded. One of the scuttled ships, the torpedo boat Makrelen, was in process of being raised from the bottom of Copenhagen Harbour by the Germans when she broke in two, and may therefore be considered a total loss.

GREECE.

Additional ships transferred to the Royal Hellenic Navy by the Admiralty during 1943 included the destroyers Themistocles (ex-Bramham), Ægean (ex-Avonvale), Crete (ex-Hursley), Navarchos Hastings (ex-Cowdray), and Salamis (ex-Boreas); the corvettes Apostolis (ex-Hyacinth), Kriezis (ex-Coreopsis) and Tombazis (ex-Tamarisk); and a submarine, which has been named Pipinos. From the United Navy have come a steel submarine chaser, the Vasilevs Georgios II (ex-PC 622), four wooden minesweepers and ten landing craft. These accessions have more than made good the loss last year of the destroyer Vasilissa Olga and submarine Katsonis.

Some further information has been published concerning the fate of the former Greek destroyer Vasilevs Georgios I, which was sunk in dock at Piraeus in April, 1941. She was afterwards salved and taken over by the Italians, who renamed her Hermes. When Tunis was taken, her wreck was found in the harbour, and she has presumably been scrapped. While under the Italian flag it is claimed that she depth-charged and destroyed H.M. submarine Splendid.

NETHERLANDS.

The Royal Netherland Navy has been strengthened by the acquisition from British shipyards of two submarines, the Dolfijn and Swaardvisch, as well as by the commissioning of a frigate, the Johan Maurits (ex-H.M.S. Ribble) and a corvette, the Friso (ex-H.M.S. Carnation). Other additions to the strength of Queen Wilhelmina's fleet are a flotilla of minesweepers, named after the various islands that fringe the Dutch coast.

NORWAY.

The Norwegian-manned destroyer Eskdale was lost last year. In her stead a new ship, H.M.S. Success, was transferred to the Royal Norwegian Navy; she has been renamed Stord, after the scene of one of the commando raids on the Norwegian coast. She is the largest ship flying the Norwegian naval flag, and played a distinguished part in the sinking of the Scharnhorst last December.

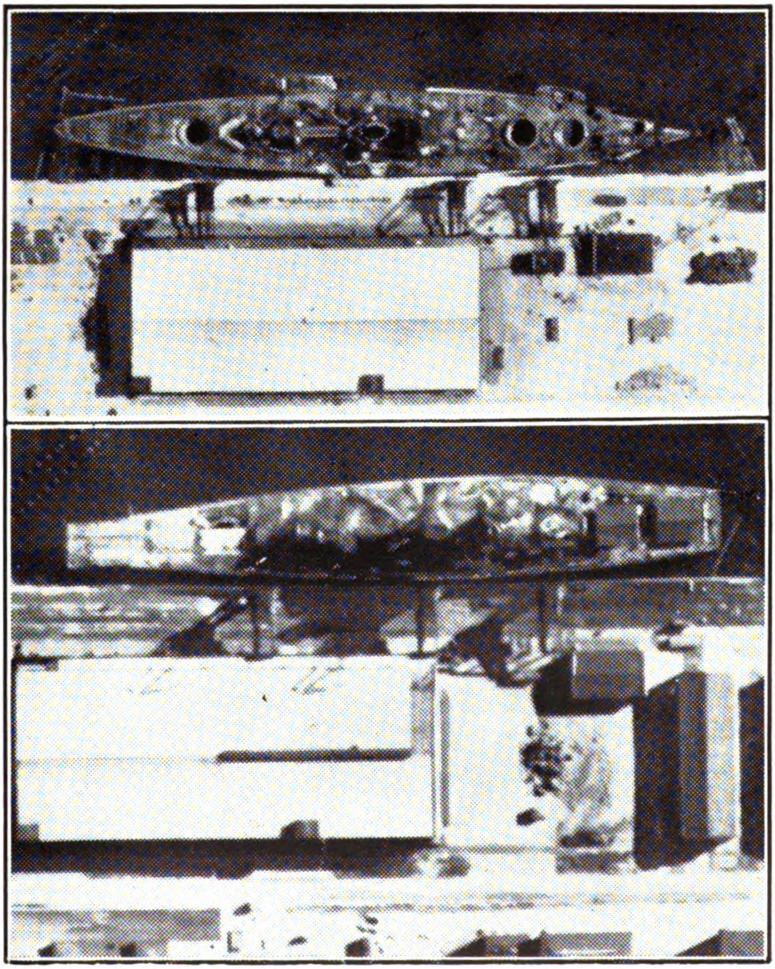
POLAND.

It was ultimately decided that the name Dragon should be retained for the cruiser transferred from the Royal Navy at the end of 1942. The destroyer Orkan (H.M.S. Myrmidon) has been lost.

According to Swedish sources, two Polish minesweepers which were sunk at Gdynia in September, the Zuraw and Czajka, were afterwards salved by the Germans, and have been put into service by them under the respective names of Oxhöft and Westerplatte.

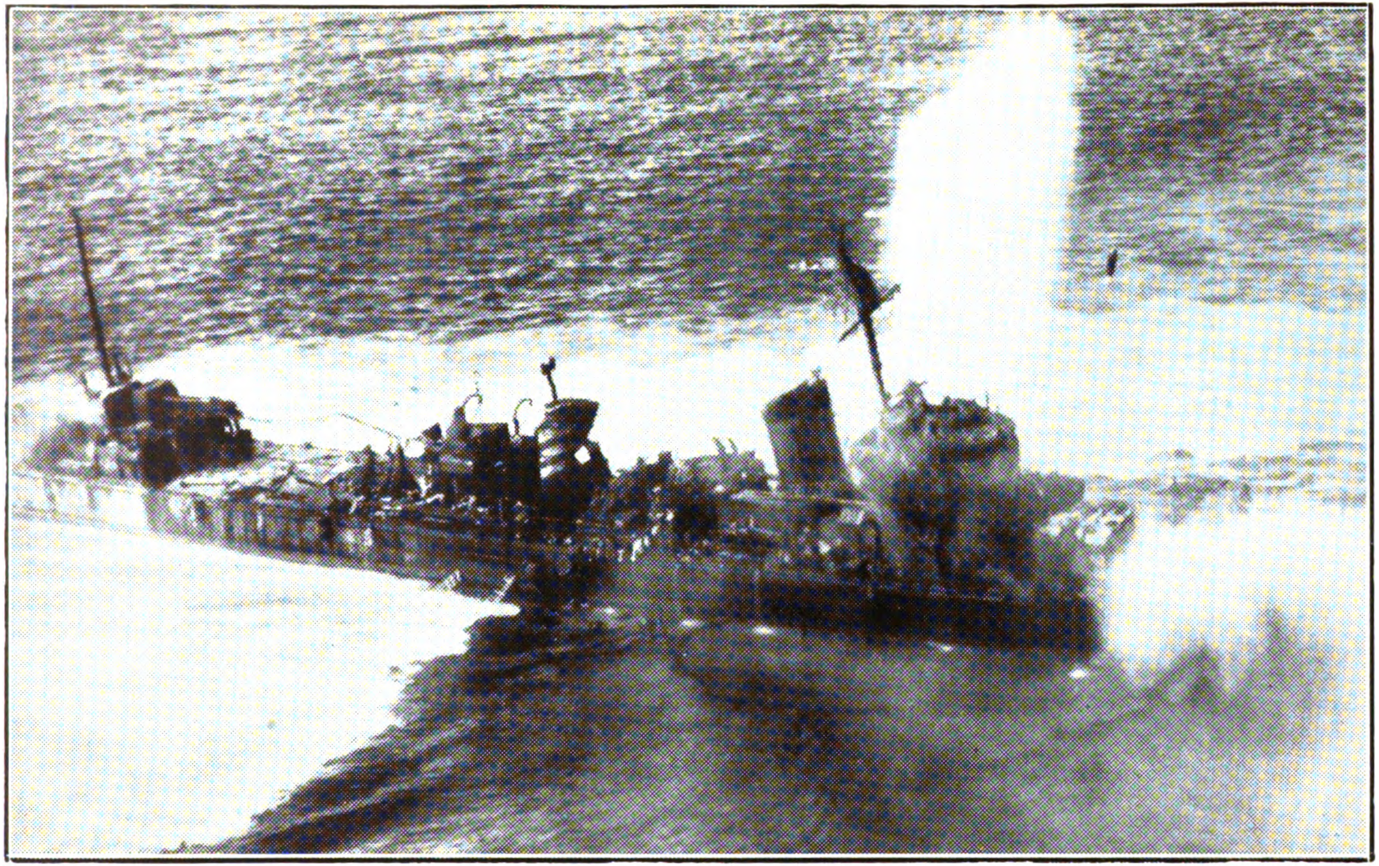
PORTUGAL.

A number of old warships have been removed from the effective list of the Portuguese Navy in readiness for scrapping. They include the



German Battleship Gneisenau at Gdynia with gun turrets removed.

(*Upper photograph taken in* 1942; *lower in October*, 1943.)



Japanese destroyer disabled by American bombs off Cape Gloucester, New Britain.

sloop Republica, the torpedo boat Tamega, the fishery protection vessel Lidador, the river gunboat Limpopo, the surveying vessel Beira and the mining tender Mineiro. At the same time it was announced that the transport Gil Eanes had been transferred to the Mercantile marine.

SPAIN.

In place of the projected 1,700-ton destroyers Alava and Liniers, of a type based on British designs, nine vessels resembling the German " large torpedo boats " of the Elbing type have been put in hand. Their names are to be Ariete, Atrevido, Audaz, Furor, Intrepido, Osado, Rayo, Relampago and Temerario, all of which have been borne by ships of the Spanish Navy in the past. On a standard displacement of 1,106 tons these ships will mount an armament of three 4·1-inch, twelve 37-mm. and four 20-mm. guns, with two depth charge throwers and six torpedo tubes. Designed speed will be 33 knots.

Four new gunboats of 1,710 tons, the Hernan Cortes, Martin Alonso Pinzon, Pizarro and Vasco Nuñez de Balboa, are also under construction, together with six minesweepers of 615 tons, the Bidasoa, Guadalete, Lerez, Nervion, Segura, Tambre and Ter.

SWEDEN.

The Royal Swedish Navy continues to be busy with new construction. Alterations have been made in the design of the new cruisers Göta Lejon and Tre Kronor, which are therefore likely to be longer under construction than originally expected. Reconstruction of the cruiser Gotland as an anti-aircraft ship has been put in hand.

The minelayer Älvsnabben, of 4,000 tons, laid down in October, 1942, was completed in April, 1943. She has a main armament of four 6-inch guns, supplemented by numerous anti-aircraft weapons.

The destroyers Sundsvall and Visby were completed last year, and the Hälsingborg and Kalmar were launched. Construction of the larger destroyers Öland and Uppland is proceeding.

The submarine Sjöborren has been salved and refitted, but an older one, the Ulven, was lost through striking a German mine laid in Swedish waters off Marstrand in April, 1943. In the following August another submarine, the Illern, was sunk in shallow water by collision with a merchant vessel. Being over 20 years old, it is doubtful if she will be refitted.

Four coastal submarines of 367 tons, U 4, U 5, U 6 and U 7, and four motor torpedo boats, Nos. 28–31, were launched during the year.

The active personnel of the Navy now numbers about 10,000 officers and men, including the conscript class of the year (about 2,000).

TURKEY.

The French naval oiler Adour, which was interned in a Turkish port at the time of the Allied occupation of Syria, has been purchased by the Turkish Government for use as a fleet auxiliary. She is a 15-knot vessel of 4,220 tons displacement, built in 1938. Her new name is Istanbul.

YUGOSLAVIA.

The ex-cruiser Dalmacija, of 2,360 tons, manned by German naval personnel, was sighted aground on Silba Island, in the Adriatic, by Allied aircraft on December 21, 1943. As a result, British motor torpedo boats attacked her the same night and successfully accomplished their object of destroying her. Her history is an unusual one, for she was launched at Bremen as the German cruiser Niobe as long ago as 1899. Laid up after the last war, she was purchased by the Yugoslav Government in 1926 and refitted for duty as a training ship.

SOUTH AMERICAN REPUBLICS

ARGENTINA.

Completion of the sloops King and Murature, laid down at the Rio Santiago naval dockyard in 1938–39, is still held up owing to the non-delivery of their Diesel engines, which were ordered in Germany.

BRAZIL.

The destroyers Amazonas and Araguaia were both launched at Rio in November last, simultaneously with the commissioning of the Greenhalgh, Marcilio Dias and Maris e Barros, which was originally fixed for an earlier date.

The corvette Henrique Dias was completed last September; one of a class of six, ordered in the first instance for the Royal Navy but later transferred to Brazil, she has a displacement of 920 tons and a speed of 12·5 knots with coal-fired boilers. Her armament comprises one 3-inch and four 20-mm. guns and four depth charge throwers.

Over a dozen submarine chasers have been acquired from the United States Navy on Lease-Lend terms. Some are of steel and others of wooden construction. A motor launch of Canadian design, the Rio Negro, was laid down at Rio in November.

A transport of 3,600 tons displacement, the Itassucé, was taken over by the Brazilian Navy last year.

CHILE.

The coastguard patrol vessel (*escampavia*) laid down at Valdivia in 1939 has now been completed and put into commission. She has been given the name Aguila (eagle), which matches well with that of one of her consorts, Condor.

CUBA.

A considerable number of motor patrol boats have been transferred to the Cuban Navy by the United States Coast Guard. Most of them are apparently of the CG 440 type, displacing about 90 tons.

ECUADOR.

Three armed yachts and two Coast Guard patrol boats have been acquired from the United States. One of the yachts is the ex-U.S.S. Moonstone, of 469 tons gross, built in 1929.

PERU.

Six ex-U.S. Coast Guard patrol boats were delivered to the Peruvian Navy in 1943, and arrangements made for the acquisition of two more early in the following year.

ASIA.

CHINA.

The ex-British river gunboats Sandpiper, Falcon and Gannet, which were presented to the Chinese Government in February, 1942, have been renamed Ying Hao, Ying Teh and Ying Shau, respectively ; and the ex-U.S. gunboat Tutuila, transferred to China in the following month, is now the Mei Yuan.

PERSIA.

It is now known that neither of the two sloops sunk by the gunfire of H.M. ships in August, 1941, has returned to service. The Babr, sunk at Khorramshahr, was refloated and towed some distance up the Karun River, but she was so far from being seaworthy that she sank again soon afterwards. The Palang foundered at Abadan. Both vessels may therefore be written off as total losses.

Four gunboats of 331 tons, built in Italy in 1931 as the Chahbaaz, Simorgh, Karkas and Charogh, are now serving with the Royal Indian Navy under the respective names of Hira, Lal, Moti and Nilam. The ex-German minesweeper Shahin, bought in 1923 for £4,000, is no longer serviceable, her plates being rusted through and her engines in even worse case. Thus the Persian Navy is no longer a considerable force, its entire strength comprising the Imperial yacht Chahsevar, on the Caspian, three 28-ton motor launches and a tug, the present employment of which is uncertain.

FRANCIS MCMURTRIE.

CHAPTER III.

THE FUTURE OF SEA AND AIR TRANSPORT.

The Battle of the Seas continued throughout the year 1943, but with increasingly disappointing results to the enemy. Shipping losses steadily declined, while the destruction of U-boats, owing to improved offensive-defensive measures, reached a height unparalleled either in the present or in the First World War. In the six months—May to October, 1943, more than 150 U-boats were sunk as compared with 155 in the two years and nine months ending October, 1918. In the last three months of that period—August to October, 1943—more U-boats than merchant ships, British and Allied, were destroyed.

This battle has lasted longer than any battle on land or sea of which history holds the record, and it is being fought on the largest battlefield—an area two-thirds larger than the whole of the land surface of the globe. On the other hand, it has engaged a relatively small number of officers and men in comparison with the numbers in the armies which the United Nations have mobilised and trained since the war began. Though official figures are not available, the casualties which have been suffered at sea, mainly in defence of essential trade, have probably reached a higher percentage of the number employed than either on land or in the air, in spite of all the measures for saving life which have been adopted by the Ministry of War Transport.*

Tribute has been paid, but not too high tribute, to the courage, endurance and skill of the merchant seamen, civilians who were forced into the forefront of this global war. On the other hand, has adequate recognition been given to the splendid and unremitting services of the officers and men of the small craft of the Royal Navy and the pilots of the aircraft who have defended them ? They had to submit in the early stage of the war to long periods of exacting and perilous duty with little relief owing to the shortage of armed ships and aircraft. They had to fight against heavy odds, but they doggedly fought. Only after many months did the staffs of the two services succeed in securing forces in any way adequate to meet the scale of the enemy's attack. So, in recording the passing of the crisis in the U-boat war, let honour be given not only to the merchant seamen, untrained in the arts of war, but to the seamen of the Royal Navy as well as the pilots of the air who have also paid the heavy price of Admiralty.

THE GOVERNMENT AND THE SHIPPING INDUSTRY

The enemy's campaign has brought about a radical change in the shipping industry. The ships which have been sunk were privately owned, but for the most part they have been replaced at sea by vessels built in British shipyards to the order of the Government and by other ships constructed in the United States or Canada. These new vessels are being managed for the Government by private owners, but for the moment they are state-owned.

In the " Memorandum on War Time Financial Arrangements between

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* *Vide* " Brassey's Naval Annual," 1942.

His Majesty's Government and British Shipowners," which was issued in August, 1940, it was stated :—

> "His Majesty's Government recognise that their predecessors in office in 1939 found it necessary to formulate a number of proposals for according financial assistance to British Shipping which they invited Parliament to authorise by the British Shipping (Assistance) Bill, 1939. The progress of this legislation was interrupted by the outbreak of war, but the necessity of maintaining the British Mercantile Marine in adequate strength and in a position of full competitive efficiency is recognised no less strongly by His Majesty's Government to-day. They will, therefore, keep this question constantly in mind as one which it will be necessary to ask Parliament to deal with in due course."

After the issue of this White Paper, the Chamber of Shipping of the United Kingdom made it clear to the Government that it would regard any attempt to nationalise shipping after the war as "suicidal." It added that "it would be equally disastrous if the Government were to dislocate the industry by entering into competition with it in peacetime." It urged that "it was essential that, if there should remain any Government tonnage which had not been disposed of when the war ends, the Government should introduce a scheme for its disposal under which such tonnage would be transferred to private ownership." That was, in fact, the course adopted after the First World War, when all ships built and building to the order of the Government were sold to shipowners and paid for in part out of the insurance money received on account of lost tonnage and in part out of the reserves of the industry itself. On this occasion, owners have agreed to purchase some of the Government-built ships, but ownership will not be effective until after the war. So far, there has been no indication of what is to happen to the balance of state-owned shipping, some of it built or purchased at extraordinarily high prices.

Whether the industry will be nationalised or whether it will continue to be conducted by private enterprise, as in the past, remains uncertain, though there are signs that all idea of out-and-out nationalisation is likely to be abandoned, and the discussion will be concerned mainly with the future of coastal shipping in relation to rail and road transport. Ocean-going shipping is part of an international transport system since the seas are all one and every nation has the right to navigate them under competitive conditions, the ideal being that the ships which are most efficient and economical should, irrespective of flag, obtain the trade in passengers and goods. British owners are prepared to accept that test in future as in the past.

Many foreign nations subsidised their shipping before the war and resorted to a variety of forms of flag discrimination in order to support their own mercantile marines, and British shipping, which was unsubsidised and unprotected in any way, not excluding the coastal trades, consequently suffered. In 1938 there were 2,000,000 tons gross less ocean-going shipping on the United Kingdom Register than in 1919. At last the Government decided that aid had to be given and in July, 1939, introduced the British Shipping (Assistance) Bill in the House of Commons. The character of these plans for helping the industry may be usefully recalled in order to show the extent of the distress which prevailed in the industry.

1. *Tramp Shipping Subsidy.*—A sum not exceeding £2,750,000 was to be payable for tramp voyages on the recommendation of a statutory committee—the Tramp Shipping Subsidy Committee. The scheme would come into operation on January 1, 1940, and remain in operation for five years. The amount paid each year would be determined by reference to the average level of freight rates for that year.

2. *Shipbuilding Loans.*—A sum of £10,000,000 was to be provided, out of which loans would be advanced for the building of cargo vessels, ordered after March 28, 1939, and laid down within two years from the commencement of the Act. Each loan would be secured by a first mortgage and would be repayable within 12 years from the date of the first advance.
3. *Shipbuilding Grants.*—£2,500,000 was to be provided for grants towards the cost of building cargo vessels ordered after March 28, 1939. Five separate grants were to be made, the initial grant, payable on completion of the vessel but not earlier than March 31, 1940, not exceeding £500,000. If the average level of freight rates in any one year was higher than a determined index figure, the grant would be withheld in respect of that year, unless the average for the four years was less than this figure.
4. *Assistance for Liner Shipping.*—A maximum sum of £10,000,000 was to be provided for assistance to liner services suffering from foreign subsidised competition.
5. *Merchant Ship Reserve.*—The Board of Trade was to be empowered to purchase vessels registered in the United Kingdom, for the purpose of creating a reserve for use in an emergency, to the amount of £2,000,000.

The President of the Board of Trade, in introducing this measure, remarked that there were a number of industries just as important, others which employed just as many men, and a number of industries whose diminution or disappearance would be staggering to the economy of the country, and would cause the gravest social consequences. But, whereas the diminution or disappearance of other industries might be a catastrophe which the country could survive, the disappearance of shipping would be vital; "it would immediately reverse the progress of centuries and we should revert once again from an Empire to an island." He recalled that in the debate on shipping five years before, when a small tramp subsidy was granted for a period of two years, they had discussed very much the same economic questions, but there had since been a change in degree. M.P.'s then talked of the growth of foreign competition, of the direct or indirect aid by subsidies from the State, of the over-supply of world shipping and the under-supply of world trade, and of the difficulties of maintaining a relatively high standard of conditions in the Merchant Navy in the face of low standards and Government assistance in many other countries. Most of the arguments which were then used still held good and justified much of the new Bill.

But since 1934 the situation had changed. Whereas then it was possible to discuss the matter as though it was only an economic question, over the whole of the debate on the new Bill hung the shadow of a possible great national emergency. The House could not think of the shipping industry only as a desirable asset in time of peace, but had to think of it as a vital service in time of war.

> The history of the shipping industry since the debate in 1934, although it reveals very considerable superficial fluctuations, has shown little change in underlying fundamental conditions. Throughout the years 1935 and 1936, when world trade was slightly on the increase, the conditions of shipping tended slightly to improve, and, with the help of the (tramp) shipping subsidy in those two years, the mercantile marine was, at any rate, able to survive.
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> In 1937 we had a complete reversal of conditions. It was a good year for shipping. Freights rose rapidly and laid-up tonnage in this country was reduced to a very low figure, and for the first time for many years orders flowed freely into British yards. If these conditions had continued there would have been no necessity for me to introduce a bill of this character. Unfortunately, that prosperity was only a flash in the pan.
>
> There is no need to recount the economic causes which brought it to an end; the recession in America, the fall in commodity prices and consequent shrinkage in world trade. But, after the bright year of 1937, by the spring of last year (1938) although perhaps we were not back as low as 1934, we were back to a position when the industry was faced once again with great difficulties.

In view of the outbreak of war in September 3, 1939, which caused the British Shipping (Assistance) Bill to be dropped, it is of interest to recall the following statement by the President of the Board of Trade, as an indication of the sad condition to which, from causes beyond the control of the owners, the industry had been reduced :—

> **Of course, all the time that these fluctuations were going on, the underlying factors remained the same. Even when there was increasing world trade, as there was between the years 1934 and 1938, the increase was not at all commensurate with the increase that was taking place in world shipping. One has only to look at the figures of international shipbuilding, not to wonder, but I think to be certain, that that abnormal increase in world shipping has not been due entirely to economic motives or economic considerations in the countries where it has taken place.**
>
> **Since 1914, the merchant navy of Japan has been more than trebled, the merchant navy of Italy has nearly trebled, and Germany, after the practical extinction of the whole of her merchant navy, has now regained the position she held in 1914. I wonder whether any Hon. Member will believe that building to that extent, at a time when there was no corresponding increase in the total quantity of world trade, has been actuated by economic considerations.**

The President claimed that it had been the policy of successive British governments, in those years, to adjust the quantum of world shipping to the quantum of world trade, because it was only if an equilibrium between the two could be established that any hope could be entertained of prosperous conditions for the shipping industries of the world as a whole. " Of course, to try to adapt those two quantums does not simply mean that other countries are to have what they like, and that this country is to have what they leave." Over the past few years, it had been clear, he added, that the attempt to settle the question of co-operation by international reasonableness had failed ; and as it had failed, even though that failure might be only temporary, " no Government could stand by and make no attempt to assist the British industry to meet the subsidised and unfair competition which, very often for motives other than economic, was being set against it the world over."

Those were the circumstances affecting British shipping in which the war broke out. The industry was suffering eclipse. Whereas in 1914 39·25 per cent. of world tonnage had been entered on the Register of the United Kingdom and the Dominions owned 3·64 per cent. (making 42·89 for the Empire), in June, 1939, the United Kingdom's proportion had declined to 25·90 per cent., the share of the Dominions of world tonnage showing a slight increase to 4·65, with the result that the Empire's tonnage had fallen from 42·89 per cent. to 30·55 per cent. of all the ships under all flags. The decline in British tonnage was partially reflected in the figures of entrances and clearances in British ports. The latest figures available are those for the year 1938. In that year only 58·9 per cent. of British imports were carried in British ships as compared with 65·8 per cent. in 1913 and 67·7 per cent. as late as 1921. In the case of exports, the percentage of 59·0 per cent. (1913) had risen in 1921 to 67 per cent., but by 1938 had again fallen to 59·0 per cent. It may be added that during those years the weight of imports increased from 56,002,000 tons to 67,300,000 tons, while retained exports and exports of manufactured goods declined from 16,937,000 tons to 11,470,000 tons. The exports of coal in 1938 were half what they had been in 1913.

It is important to keep in mind the picture of the distress of British shipping before the war if we are to appreciate adequately the services which it has rendered during the struggle. One result of that deterioration in the tonnage position and lack of employment was that between the close of the First World War and the opening of the Second World War, the *personnel* declined by 70,000 and even those who remained suffered from long periods of unemployment; some officers served before the mast in order to support their families and others, like hundreds of seamen, walked the streets of our seaports in enforced idleness. The tonnage laid up was at one time as high was 3,529,000 tons gross and at no time could employment be provided for all the vessels under the British flag, though many owners operated their ships at a loss. It was in those circumstances that the Government of the day introduced the British Shipping (Assistance) Bill. Though it could not be suggested that the ships had not been well built and well managed, the volume of British shipping had steadily declined, trades had been lost (especially in the Pacific owing to Japanese subsidised competition), and the financial reserves of the whole industry had been gravely reduced. Shipping was a " distressed industry " when the war opened and the Government took control, leaving the management to the various fleets to the owners, who received only 5 per cent. interest and 5 per cent. on account of depreciation.

FREEDOM AND EFFICIENCY.

It was not until a large volume of tonnage had been sunk by enemy action, that the owners, anxious for the future of their industry, realised the desirability of creating an organisation which could speak authoritatively for all of them during and after the war. So the General Council of British Shipping was formed, consisting of representatives of the Chamber of Shipping and the Liverpool Steam Ship Owners' Association. Its first action was to prepare a report on the future of the industry which was issued early in 1943 under the title " Freedom and Efficiency." It emphasised the importance of shipping to the people of the British Isles if they were to continue to import the necessary food and raw materials, export manufactures and coal, and balance the national trading account by " invisible exports," the contribution of the industry in pre-war years having ranged from £80,000,000 to £340,000,000 each year, according to the estimates prepared by the Board of Trade :—

> British shipping employed in world trade is one of our great export industries; therefore its prosperity is of the first importance. The ability of British shipping to play its part will depend on the equipment and efficiency of British ships, and the extent to which it secures employment must be controlled by the volume of world trade. Substantial freedom in the world market is also a necessity: restrictions imposed by foreign governments on the employment of ships or foreign subsidised competition will vitally affect the British Mercantile Marine. The future of shipping is, therefore, bound up with national economic policy, on the one hand, and, on the other, with the willingness of all nations to maintain and expand international trade in a free market.

The Council foresaw that control would continue for some time after the war and then conditions of freedom should exist :—

> This will be a situation which calls for the fullest application of the policy of non-discrimination which underlies the Atlantic Charter. On the transport side, the fleets of Allied and Neutral Nations must assume a proportionate share at comparable rates in the duties of relief and enjoy equal opportunity of securing employment in the free market. Enemy shipping, on the other hand, should be employed entirely in the relief and reconstruction of countries which the enemy has devastated.
>
> British shipping will claim and expect release from control at the same time and in the same proportions as any release of shipping under other flags. Special arrangements will be required to ensure fair treatment for owners of vessels required for Government service after the cessation of hostilities, especially those whose established liner services have had to be abandoned during the war.

The opinion was expressed in the report that supply of tonnage would soon overtake the demand for tonnage owing to the great expansion of shipbuilding facilities in the British Isles, in the United States, in Canada, Australia and elsewhere. But so far as the British shipping industry was concerned, there would be a shortage of "quality ships," especially passenger vessels, as distinct from mass production ships. It urged that control by the Government should be gradually relaxed and "that in order to meet this condition the industry should provide the elasticity in the use of ships necessary to meet a shortage in quality tonnage and changes in the channels of trade."

> The elasticity should be secured by the Government delegating to the industry through its organisations the task of carrying out the national and international policy in regard to shipping, in the case of liners through a liner committee, and in the case of tramps under a licensing system operated by an international administrative committee and supported by effective Government guarantees. Corresponding arrangements should be made in the short sea trades and tankers will also require appropriate organisation which should include the oil interests.
>
> Once the immediate relief period is over, there should be a progressive liberation of shipping coupled with the establishment of effective co-operative machinery in the industry to ensure satisfactory service and to maintain freight markets at a reasonable level. Support will be required from the Governments of the shipowning nations to ensure that vessels of all flags comply with the conditions of this co-operation under pain of suitable penalties. Such assistance, not being financial, should not involve any question of Government control.

In looking forward, the Council did not ignore the needs of the officers and men and suggested that the National Maritime Board, representing all interests, should be retained to regulate wages and conditions of work, pointing out that such wartime measures as continuity of work, paid leave and pensions were dependent on securing the prosperity of the British mercantile marine. In other words, if there were not sufficient ships on the Register of the United Kingdom full employment could not be assured and if the ships did not pay their way, the wages of the crews would not be forthcoming, except from the National Treasury in the form of a subsidy.

The report then dealt with the alternatives of State ownership and private enterprise. It pointed out that "all experiments in nationalisation have proved that the luxury of a State fleet is a most expensive one and in the past they have been brought to an end by revolt of the taxpayer." It was added that they had failed to secure the support of the exporters and importers of the nation concerned; traders had insisted on using the best ship-carrying power available whatever might be its flag. Apart from this, shipping, it was pointed out, was essentially competitive and "it is fearful to contemplate a situation when a normal incident of commercial competition will become an act of State with diplomatic reverberations."

The Council expressed the view of all shipowners that the results of State control would be disastrous, but, on the other hand, disclaimed any belief in "the unorganised activity of individuals without regard to the welfare of the workers or the interests of the country." It pointed to the measures for self regulation which the industry had already adopted. The Council summed up its opinions as follows :—

> This country must not be afraid to say to its allies that a strong British Mercantile Marine is just as necessary to this country as its Navy, Army and Air Force. Not only must this be said, but the country must be prepared to defend it in argument, and to require that the Peace Settlement should include effective guarantees against a renewal of the race in subsidies which marked the pre-war period.
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> The history of British shipping shows that new tonnage has in the past been largely financed out of profits and cash representing depreciation. In 1939 the depreciation accounts

of many owners showed that trade in the previous decade had been such that full depreciation had not been earned.

During the war Government policy has strictly limited the earnings of ships—the war profit whether in cash or service being taken by Government—so that in many cases cash will not be available to replace obsolescent tonnage, which survives the war, and indeed in some cases replacement of war losses, especially of tramp shipping, will require financing.

The Council pointed out that the Government had been warned of the effect of its war taxation system on the future recuperative power of industrial enterprise. " No industry is allowed to make secure provision for the future. The vague promise that Government will deal with this problem when it arises is not satisfactory. British shipping will be called upon to face competition after the war, and it is imperative that the industry should retain sufficient financial strength to build the best and most competitive ships."

COMPETITION OF THE AIR.

In a subsequent report on " Sea and Air Transport," the Council urged that it would be necessary after the war for the country to have at its disposal " a commercial air fleet comparable to the mercantile marine, which has been an equal necessity in the past."

British trade will in future require a balanced fleet of ships and aircraft. For Great Britain, the co-ordination of airborne and surface transport will present problems to be faced and opportunities to be grasped greater than those confronting any other Great Power. The shipping industry does not claim any specialised knowledge of aviation. What it does possess, and what it offers as a practical contribution to this task is a wealth of experience derived from four generations of successful management of overseas services; an efficient organisation already dealing with those classes of passengers and freights likely to be borne by air; and a network of branch offices and agencies all over the world.

In effect, the General Council claimed that private enterprise had never failed to provide the country with well balanced fleets of ships to meet the needs of peace and war and shipowners were qualified to meet the new challenge of air transport.

The aeroplane will never oust the ship, but it may well have a profound effect on the speed and character of seaborne services. In the past both the carriage and the protection of our foreign trade have been a matter solely of ships. The obligations implied not only by the former aspect but, in considerable measure by the latter also, have fallen upon our mercantile marine. Twice in twenty-five years the enterprise, and latterly far more the determination, of British shipowners has supplied us with a volume of tonnage, which in quantity and quality has not only met our material needs during the hazardous transition from a peace to a war economy but has supplied the Royal Navy with a vast fleet of auxiliaries as well.

Apart from the obviously interested views of shipowners, it is apparent that the war itself has proved to be " a forcing house for the development of the aeroplane and an agent for the wholesale destruction of ships." What might in ordinary circumstances have been a gradual change will become consequently an abrupt transition. So the Council urged that shipowners, when tackling the rehabilitation of their traditional services after the war, would be presented also with an unusual opportunity to convert them spontaneously from the old medium of transport to the new medium in whatever respects and in whatever proportions their respective characteristics and the requirements of each trade or group of trades might require. It was conceded that private enterprise as represented by shipowners could not compete against such a subsidised monopoly as the British Oversea Airways Corporation. It claimed that a single national corporation could not achieve in the air anything comparable to what private enterprise had achieved at sea. It suggested that had the development of the mercantile marine from its renaissance in the middle of last century onwards been entrusted to a single agency, it was inconceivable that it would have attained either the magnitude or the variety of specialised characteristics which it in fact did. " A far wider and more varied deployment of experience, resources and individual enterprise would appear to be required and British shipowners, in technique and experience and in their long established position in international transport, should be able to make certainly not an exclusive but a substantial contribution to the sum total of British air commerce."

The Council, in effect, entered a plea that the ship and the aeroplane should be regarded as complementary agents for the transport of passengers and goods. To bring British sea lines into active participation in the development of British air transport, would, they urged, not only help to provide a wider basis for deployment but would ensure a desirable co-ordination between the two forms of transport. " The conduct of a regular air line and that of a regular sea line have wholly sympathetic characteristics. Each calls for long term policies ; each requires an international outlook ; in each rigid technical discipline is essential to public safety ; each, finally, succeeds only by capturing and retaining the goodwill of the travelling public or the consignor of freight."

Except in the case of air lines which might be established for political and other national purposes, the Council urged that subsidies need not and should not be paid to the operators of air services. In effect, British shipowners, facing the problem of replacing their many fast and specialised ships which had been sacrificed to the war effort, asked whether aviation was to be artificially stimulated at the taxpayer's expense to the point of competing uneconomically with the ship and, if so, with what object and for whose benefit. As to the latter point, British shipowners, who for twenty years faced unaided the competition of State-subsidised foreign shipping, stated that they were unlikely to repeat willingly the same experience in the air. " They know too well the frustration both of initiative and of policy which follows when one participant in a competitive and self-supporting industry is free to introduce artificial and uneconomic conditions backed by the arbitrary assistance of his Government." The Council claimed that, sooner or later, an economic equilibrium must be reached between the respective costs and advantages of airborne and surface transport. " The abolition of persistent and arbitrary subsidies must surely be a condition precedent to any honest and confident investment of funds, whether public or private, in civil aviation and thus of any really healthy progress in the development of a genuine air commerce."

Turning to a detailed examination of the future of sea and air transport, the General Council urged that the first task of any International Air Congress should be to put an end to the tradition of uncontrolled national subsidies which characterised the years before the war. While not claiming special knowledge, they felt entitled, on general grounds, to submit constructive principles. There would, in their opinion, be sufficient areas of self-supporting aviation to ensure the development of the commercial aeroplane by ordinary evolution. On the other hand, if owing to specified factors (e.g. the long fuel stages inherent in trans-ocean flying), particular air services could not be self-supporting, then subsidies for such services should be paid solely for the promotion of international intercourse and calculated solely to offset the handicap imposed by those factors. A plea was entered that no subsidy, direct or indirect, should be granted otherwise than through the medium of a formula, which should itself be published and be incapable of equivocal interpretation. Their final claim was that in no event should any subsidy be such as to obviate the charging of fares and freights reasonably proportionate to the speed of the service offered and that no general subvention should be granted for the carriage of air mail, which should be carried on a poundage basis. The poundage rate per unit per mile paid by postal authorities on each route should be published. Assuming international agreement on these lines, the main need for any super-national control of air transport would, in their opinion, have been met.

As to the fear that the aeroplane built for the purposes of peace might be used for warlike operations, the Council expressed itself as strongly opposed to the kind of international control envisaged by those who believed in the policy of putting civil aviation in a strait jacket as a kind of punishment for the misuse of the aeroplane in war. " Similarly, although it may be impracticable to claim a ' freedom of the air ' as complete as the traditional ' freedom of the sea,' they would be equally strongly opposed to such arbitrary interference with the movement of air-borne traffic as is specifically granted under the existing International Air Convention."

British shipowners, as this report revealed, are ready to apply their technique and experience with all their traditional vigour and enterprise to the new medium of transport. Their desire is to find scope for initiative and independence so that they may carry on overseas air services which would be complimentary to their long-established sea lines. In accordance with this policy, most of the liner companies have amended their articles of association so as to enable them to own and operate aeroplanes. The first indication of the serious purpose of British shipping to accept the challenge of the air was the announcement early in November that five shipping lines normally engaged in the trades with South America had formed a separate, joint company to operate air services to that continent. The companies concerned announced their intention of operating air services " as soon as the necessary consents and machines can be obtained." The lines involved, with headquarters in London and Liverpool, are the Royal Mail, Blue Star, Pacific Steam Navigation, Booth Line and Lamport and Holt. Together they represent a capital of nearly £7,500,000. The decision to pool interests in the air which are divided on the sea is not illogical; indeed, in the particular circumstances, no other course would have been practicable. It was pointed out in the report of the General Council of British Shipping on " Air and Sea Transport " that " to secure an optimum size of air-operating organisation may well call for the pooling of resources by sea lines in partnership rather than operation by single lines." The fact that the service by air is, on any reasonable estimate, bound to be considerably smaller and less diversified than the service by sea—at any rate so far as the South American route is concerned—dictated a corresponding concentration of management or operating units. The alternative would be a duplication of staffs and facilities at the terminal points, as well as at the " ports of call " and in feeder services, unjustified by the nature and volume of the work required. Apart from that, there would be obvious complications in actual operation—adjustment of flying times, interchangeability, servicing, and so on—from which transport users would gain nothing and lose much As the *Shipping*

World remarked in commenting on this development, the co-operative venture proposed for the air route to South America does not necessarily mean that the same pattern should be followed in the case of services to other parts of the world—though there are obvious parallels. Over the North Atlantic, for example, where the air traffic will be far greater and the direct main routes more numerous, the promise of more efficient service might lie in the establishment of more than one concern.

THE FUTURE OF THE PERSONNEL.

Though official assurances as to the future control of the shipping industry have been lacking, shipowners have co-operated in many measures for the benefit of the industry and its *personnel.* Chief among these in the year 1943 was an outline plan for the post-war training of navigating officers and deck ratings which was drawn up by the Merchant Navy Training Board. This body consists of shipowners' representatives (appointed by the Shipping Federation and the Employers' Association of the Port of Liverpool) ; representatives of sea-going personnel (appointed by the Mercantile Marine Service Association, the Navigators and Engineer Officers' Union and the National Union of Seamen) ; representatives of the Government Departments concerned (the Ministry of War Transport, the Board of Education and the Scottish Education Department) ; representatives of pre-sea training establishments ; and representatives of the Association of Education Committees and the Association of Navigation Schools.

The plan was published in June. It was explained that the Board's object was " to ensure, in advance, that any general development in national educational policy can be properly and practically adapted to meet the special needs of shipping and to improve the present methods of training for a career in the Merchant Navy." It was explained that in the absence of any definite statement of Government post-war education policy or a detailed statement of Government policy as regards shipping, the proposals could only be tentative and could only be in outline, but in preparing them they had assumed (*a*) that the school leaving age would be raised to at least 15, and (*b*) that compulsory attendance at day continuation classes for one day per week would be required after leaving school up to the age of 18. It was explained that it was obviously impossible for boys at sea to comply with (*b*) unmodified and for that reason alone—and, of course, there were others—it would be necessary to distinguish shipping from shore vocations.

In the circumstances, the Board outlined two schemes—one for training navigation officers and the other for training deck ratings which would they believed, provide the necessary equivalent. The Board recalled that in 1935 a radical change in the training of apprentices and cadets was made by the establishment of the training scheme of the Merchant Navy Officers Training Board. The object of that scheme was to provide for apprentices and cadets, as a substitute at sea for the educational advantages which apprentices in shore trades enjoy, such as technical schools, evening classes, etc.: (*a*) a standard syllabus of instruction during the period of indentures ; (*b*) periodical reports by the master to the owner on the apprentice's progress and conduct ; (*c*) an annual examination or test on board ship ; (*d*) a system of correspondence courses by which the individual apprentice is kept in direct touch with an approved navigation school. The scheme, it was recorded, had been outstandingly successful and at the outbreak of war covered 92 per cent. of the total number of apprentices and cadets. At present entrants could be divided into three broad groups, viz.: (*a*) boys trained at the public schools, e.g. "Conway," Pangbourne, and "Worcester" (12 per cent. to 15 per cent.); (*b*) boys trained at sea in the special cadet ships of the British India and New Zealand Shipping Companies (3 per cent.) and (*c*) boys who go to sea either direct without any pre-sea training or after a course at a navigation school, etc. (82 to 85 per cent.).

The Board added that "there is everything to be said for judicious diversity in methods of training. No one scheme is likely to be, or to remain, ideal and much can be gained from well-founded experiments." So it recommended that the method of entry in (*a*) should continue. This method would include, in addition to the three public schools mentioned, systematic courses of pre-sea training at junior technical schools, and at certain other sea training establishments. This recommendation, it was explained, was subject, in all cases, to standards of training being adopted comparable to the standards laid down for Nautical Colleges, which it was suggested should be established. The Board were also strongly in favour of continuing the type of cadet ship mentioned in (*b*) particularly if both a teacher and an instructor are carried.

It was with clause (*c*) that the Report was primarily concerned. It was proposed that apprentices and cadets who at present enter the industry under (*c*) should, instead, prepare themselves for their sea career by nine months' training at a nautical residential Training College or Colleges to be specially established for this purpose: thereafter suitable candidates would join a shipping company as at present as apprentices or cadets, but would serve only in ships which satisfied certain conditions as to accommodation, continuous course of instruction, etc., and adopted an approved form of contract or indenture for three years; during this period they would come under the Training Board syllabus of instruction and system of conduct reports, annual test of progress and correspondence courses. At the end of the pre-apprenticeship training of nine months, plus the apprenticeship of three years, many candidates should be able to get their Second Mate's Certificate without any further attendance at a navigation school. The navigation schools would still be necessary to give additional tuition to what was hoped would be a minority of Second Mate candidates; they would conduct the correspondence courses, and they would also provide tuition for the higher certificates.

It was suggested that the candidates for entry into the Nautical College should fulfil certain requirements and it was urged that no boy should be debarred or deterred from applying for entry into the college on financial grounds. "Selection for the College will be made on the basis of character and ability to profit by the instruction provided." At the same time it was considered essential that parents who could should pay the full fees and that those who could not meet the full cost should contribute to their capacity. It would have a very bad effect upon the profession as a whole if the impression were created—however erroneously—that training at the college would be provided free to all. It was added that nothing should debar or deter suitable deck boys or ratings from becoming officers in due course.

The report included, in some detail, a suggested organisation and curriculum, but emphasis was laid on the Colleges being residential. It was also stated that considerable stress must be laid on physical education and upon adequate facilities for boat sailing. "We have fixed the course at nine months so that two months may be set aside exclusively for short voyages of some weeks' duration in small sea-going auxiliary sailing vessels which would be attached to the Colleges. We contemplate also that a Lifeboat Certificate would be taken at the Colleges." The Board also insisted that the course must enable boys to secure exemptions from certain sections of the Ministry of War Transport examination and to be reasonably certain that at the end of their apprenticeship they will have no need to resort to cramming to secure their certificate. Throughout the College course unsuitable candidates would be weeded out.

The outline plan also included provision for the training of deck ratings. Before the war there was nothing to prevent a boy going to sea without preliminary training of any sort. In 1936, for example, 1,599 boys went to sea for the first time as deck boys in foreign-going and home-trade ships. Of these only 617 (40 per cent.) had had preliminary training. The Merchant Navy Reserve Pool was started in May, 1941, and now boys cannot go to sea without first entering the Pool, and only trained boys are accepted; but any seamen who had served three years at sea was—and still is—statutorily and automatically entitled to be rated as an A.B. without any test of competence.

The Board's proposals briefly are that all deck boys under 18 should prepare themselves for their sea calling by a four or six months' course (according to age) at an approved residential sea training establishment; they should then go to sea as deck boys in ships which satisfy certain conditions as to accommodation, etc.; while at sea they would be encouraged to continue their education, both technical and general, by correspondence courses with shore establishments and through libraries provided on board. At the end of 2½ years on Articles, they would be entitled to be rated as A.B. only after passing a Ministry of War Transport examination on the lines of the present Efficient Deckhand examination; and at suitable stages, both in pre-sea training and when at sea, boys who on merit and ability showed themselves likely to become good officers would be encouraged to do so and would have financial barriers removed.

It was explained that the Board had no desire to make a fetish of the standardisation of training or regulated entry, or to bar entry to youths who desire to go to sea later than is usual, but they did desire to prevent young boys from going to sea without any training at all. "The so-called romance of 'running away to sea' is exaggerated, and we consider that the general disadvantages of this haphazard method of entry into the Merchant Navy outweigh any advantages there may be in exceptional cases."

Before the war there were many different types of training establishment. Some have not operated under the special war conditions, but, provided the training was not below the standard suggested, the Board stated that a continued diversity would be welcomed. "Some establishments take boys during their school life and, therefore, combine general education with sea training. At the other extreme, the principal national training establishment—the Gravesend Sea School—which trained about half of all deck boys, does not provide general education but takes boys who have left school and provides them with vocational and physical training for 10 to 12 weeks. The School is owned and financed by the

Shipping Federation with a Government grant, but is managed by a committee representing the Shipping Federation, the National Union of Seamen, the Ministry of War Transport and the Board of Education." The Board emphasised that the training establishments would have to comply with certain principles as, for instance, that they should be residential; that training would be on lines approved by the Board and include general, vocational and physical education in accordance with a syllabus approved by the Training Board, and that the course should be for at least four months for those joining at or after 16, and at least six months for those under that age. The Scout and Sea Cadet movements provided, in their opinion, excellent preliminary training for the course. Once a boy had satisfactorily completed his pre-sea training course, he would go to sea as a deck boy, but only in ships approved by the Board and with approved educational libraries. In this connection, the report added " there is no intention of making ships school-ships, but during his training at sea a boy would be encouraged to carry on a correspondence course with a shore school either for general or educational subjects." Further, in periods between voyages, if there was a post-war Pool system, he could be required to attend courses at suitable schools. As to the qualification as A.B., the Board's proposal is that, after a minimum of 2½ years' service on Articles in the Deck Department, a youth should be allowed to take his A.B.'s examination.

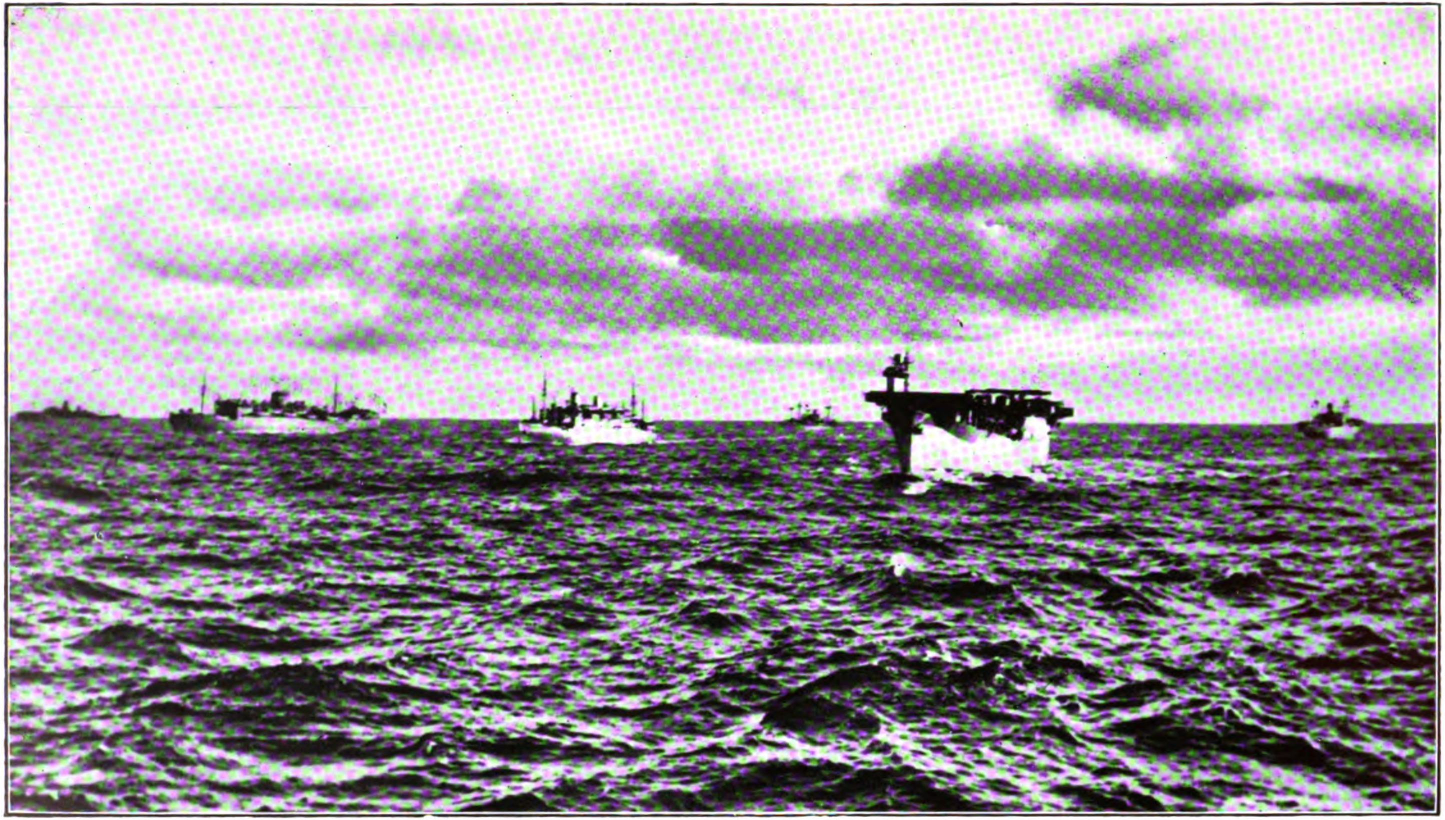
With reference to special provision for later entrants, those who go to sea for the first time at 18 or over, it was suggested that they might reasonably be expected to pass the examination for A.B. in a shorter period—two years on Articles. " But we think it important that before going to sea they should satisfactorily complete a short intensive practical course ashore somewhat on the lines of the very good Firemen's training courses now in operation.

As to promotion to officer, the proposal is that after becoming an A.B., the seamen who does not desire, or is not fitted, to become an officer can look forward to promotion as a Petty Officer. But at every stage in their careers suitable boys and suitable A.B.'s should have every reasonable opportunity to become navigating officers, and no financial obstacle should remain in their way.

The Board finally assumed that the Government would make a substantial grant towards the expenses of the new scheme, but the amount would to some extent be determined by its policy towards technical education in industry generally. " We feel confident, too, that the industry will desire to make its contribution." The primary purpose of the report was to make sure that the Government should know in advance what the views of those connected with shipping were so that the industry might play its part in applying general educational changes to shipping. The Board added that they were alive to the possibility of close liaison between shipping and civil aviation and the training of personnel.

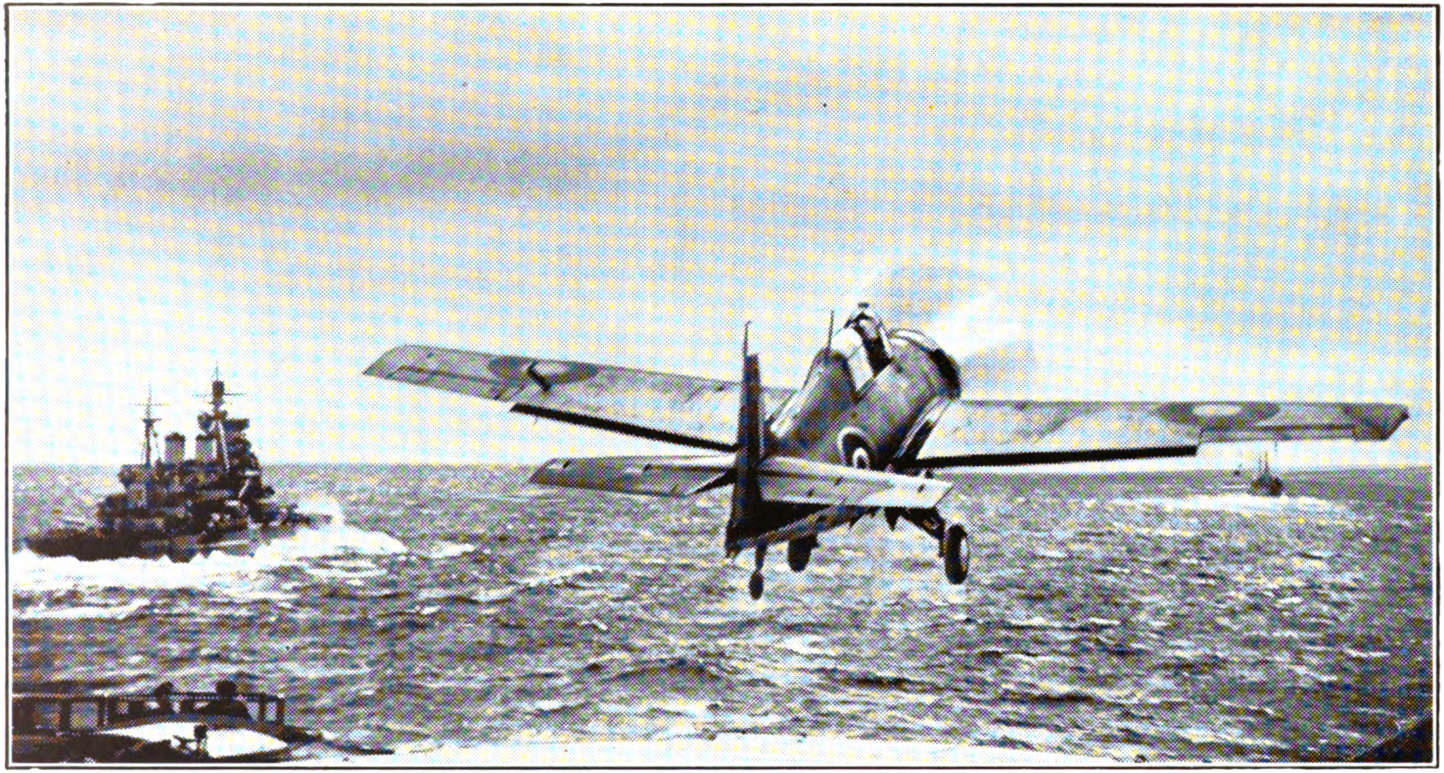
This review of the condition to which this " distressed industry " had been reduced at the outbreak of the war, of its plea for " freedom and efficiency," its response to the challenge of the air, and its willingness to co-operate in raising the status of the *personnel*, shows that British shipowners are anxious, in the interests of the nation as well as of investors and themselves as ship managers, to take in hand the restoration of British shipping to its pre-war pre-eminence as soon as possible after the war.

ARCHIBALD HURD.



An Escort Carrier at work. H.M.S. Biter with a convoy.

(Official photograph. Crown copyright reserved.)



Wildcat fighter taking off from H.M.S. Furious.

(Official photograph. Crown copyright reserved.)

CHAPTER IV.

THE AIR WAR AT SEA.

Fresh information about the part that aircraft should be called upon to play in the war at sea, information which will assuredly be used as a guide by generations of Naval and Air Force officers yet to come, was assembled during the sharper struggle against enemy submarines that occurred during 1943.

Not so readily appreciated by the public nor, on the face of it, so fatal as the land battles on the Russian front, this struggle was yet the foundation of everything else; the thing on which the whole, towering structure of allied military might was reared. The enemy's under-sea effort mounted sharply during the year and it was not until the closing months that it was deemed wise to strike a note of full confidence in the official pronouncements. And even then reservations always had to be made about the future, so fine were the margins of inventiveness, productivity, seamanship and airmanship which gave the allies the superiority.

From the beginning aircraft had played a part in the protection of shipping and had proved more capable in dealing with submarines than some German commanders had expected. The Short Sunderland and Consolidated Catalina flying boats and the Lockheed Hudson landplanes, which had borne the brunt of the battle in the early stages, had been reinforced with other kinds of aircraft, including the very long range aircraft which eventually proved so useful. The Fleet Air Arm had also been augmented, and by a host of interesting contrivances the carrier situation had been improved.

In addition the collaboration between surface craft and aircraft had been cleaned up and Coastal Command, under Air Marshal Sir J. C. Slessor, had made some advances in its striking technique. If, however, one seeks to draw general instruction from the whole picture, one arrives inevitably at two questions: first, has there been during this successful year a shift in responsibility towards the land-based aircraft and away from the ship-based aircraft and the marine aircraft? and, second, how would any such shift affect the larger Service responsibilities?

I would amplify the first question by saying that there has always been a school of thought which holds that the land-based landplane is the dominant aircraft in both the war on land and the war at sea. It is argued, by adherents of this school, that the land-based landplane, being somewhat superior to all other kinds of aircraft in certain performance qualities, such as speed and rate of climb, is the only type of machine on which the main design and productive effort should be lavished. All other types, it is said, including ship-borne machines and flying boats, are temporary expedients, to be employed only while the land-based landplane's range is being worked up enough to allow it to operate over the most distant points in the ocean spaces.

Implicit in this theory is that military control over the sea can be exercised from bases on the land many hundreds of miles away. It suggests that, with a little further development in aeronautics, a nation would be able to keep its sea routes open with surface vessels, excluding carriers, working in collaboration with landplanes based at strategic

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points on islands (as in the Azores, for example) and on the mainland. And although, for reasons which I shall hope to make clear, I do not subscribe to this theory, it must be confessed that the progress of the air war at sea during 1943 did something to support it.

A great many battles were fought in the Atlantic lasting from four to eight days, in which long-range, land-based landplanes did truly magnificent work. In the four-day battle of January, for instance, Liberators sighted 13 enemy submarines and attacked eleven of them, sinking two. Time after time the operation of these machines at great distances from the shore was reported. The old conception that for this kind of work a large flying boat, capable of alighting on smooth water, or a ship-based aircraft was necessary, had to be revised.

The landplane was reaching out farther and farther over the ocean and was proving that it could work well as a military instrument when at a great distance from its base. The drawing of arcs, with centre the nearest land base, became meaningless, for at the next moment some means of increasing the load of fuel at take-off would be found, and the aircraft would become capable of ranging much farther afield. What was not so immediately obvious as these changes took place, was that the fight against German submarines was a highly specialised kind of action on both sides. A glance at the Pacific war was a useful corrective. For the German submarines were normally working on their own, without the co-operation of surface craft or even of aircraft. The direct co-operation of the big Focke-Wulf " commerce raiding " aeroplanes was not seen in 1943 as it had been seen earlier in the war. So the long-range aircraft were almost exclusively concerned with enemy submarines. They were not normally called on to cope with enemy aircraft or with other enemy vessels.

The consequences of this are clear. The air performance of the land-based aircraft in speed and climb is not tested at the place where battle is joined. It will have to compete with anti-aircraft fire, but not with opposing fighters or even with opposing long-range machines. In brief the ultra-long-range aircraft is not challenged on the field of battle to exhibit any special air performance characteristics. Yet it is for its air performance characteristics that it has been selected in preference to the ship-borne aircraft or the flying boat.

We perceive now where the reasoning in favour of the land-based landplane to the exclusion of other types has failed. In the Atlantic the battle has not been between like forces, but between contrasted forces. The three-dimensional aircraft has met the three-dimensional sea-craft at sea level. Two essentially dissimilar animals are in conflict. In the Atlantic the allies have surface ships and aircraft ; the enemy has submarines. The trial of strength is between different kinds of instrument. Compare this with the Pacific. There mixed forces of similar composition have met. The aircraft committed to battle have had to meet other aircraft ; the surface ships to meet other surface ships ; the submarines to meet other submarines. The land-based landplane has also been doing well in the Pacific ; but it has not shown the same degree of ascendancy it has shown in the Atlantic.

An important strategical conclusion now emerges. It is that greater emphasis is placed upon the performance of weapons of war when like meets like.

Thus when surface ship meets surface ship the outcome of the combat is more heavily influenced by performance than when surface ship meets aircraft. Similarly, when aircraft meets aircraft the outcome is more influenced by performance than when aircraft meets surface ship. If the enemy uses only one part of the naval forces at his disposal—for instance his submarines—then the aircraft sent against them do not ordinarily need a high air performance. We may put the thing in concrete fashion by saying that ultra-long-range aircraft meeting an enemy task force including ship-borne fighters would be in a most unfavourable position. If the German navy were powerful enough to support their submarines with surface craft, then the progress of the land-based landplane might have been much slower.

So far—apart from this general strategical inference—the tactical aspect has been mainly discussed. There is also the economic aspect. It was on June 20 that the Admiralty announced the five-day operations of the month before, when two enemy submarines were sunk, and said that the escort-carrier Biter had been in action. Here the question that must be asked is whether it is more economic for a convoy to carry its own air protection around with it in a surface ship, or to be in the position to call on that protection from a land base. If the question were as uncomplicated as that the answer would be that it is better for the convoy to carry its own air protection with it in a surface ship or carrier. Flying hours are thereby reduced and air protection is at more immediate call.

But the question is not in fact so simple and the facts of the sea-air war point to the need for the use of both the land-based machines and the ship-based machines, working in concert. Only by that means can the fullest protection be secured. So even when the enemy is using only one type of weapon, and not a mixed force, it remains true that there is need for the ship-borne machine. It increases the efficiency—economical and tactical—of the air protection and however much or however little that increase may be it is considered to be worth while. At every stage, therefore, a closer examination of the situation shows that the land-based landplane is not self-sufficient. It must be supported by the ship-based aircraft.

We come now to the seaplane, or more particularly the flying boat, for the float seaplane is not concerned in the kind of action now being considered.

Flying boats have been a type of aircraft in which British designers and constructors have excelled. The civil Empire flying boat was a very remarkable production for its time and it undoubtedly gave a lead to the world in the lay-out of this kind of machine. Its influence has been seen in both British and American machines ever since, and it gave rise to the military version known as the Sunderland. As has been mentioned, the Sunderland flying boats did good service in the early stages of the war and are still of the highest value. The Catalina also has done well. It is, therefore, with some anxiety that one notices a tendency to abandon flying-boat development. There does not seem to be much enthusiasm for new designs or for work intended to further the advance of this kind of machine. And it is possible to assign to this tendency to neglect the flying boat the same cause that produced the tendency to neglect the ship-borne aircraft, the belief that, as it was inevitably somewhat lower in performance than the comparable land-based landplane, there was no good reason for its continued existence.

The flying boat is somewhat slower than the comparable landplane.

But it does have some advantages which are not always given their true value. It requires no elaborate and expensive concrete runways. Any stretch of sheltered water is a good alighting and taking-off place for the flying boat. It can be built of very large size without incurring the liabilities which large-size landplanes incur. It can alight on the water in the open sea with a much lower probability of damage or loss than the landplane.

Although in the British Isles the number of marine airports is not large, in the British Empire and Commonwealth it is very large. That is not solely a peacetime advantage. For air communications play their part in war as much as in peace. The flying boat does suit the inherent geography of the British Empire and Commonwealth. We should not, therefore, discard it in favour of the landplane without the most careful thought. It is in the marine tradition. It is the kind of machine which the British people know how to make and how to handle.

In the year of 1943 some new American flying boats received notice in the communiqués, but no new British flying boats. Yet if we ever aspire to become builders of really large-size aircraft, we must turn to the flying boat. It is the strangest thing that the Sunderland, which proved so brilliantly successful in anti-submarine work and in a hundred other duties in the early stages of the war, should have no successor. The Lerwick has faded from the picture and nothing has appeared to take its place.

It may be true that in the battle of the Atlantic the long-range, land-based landplane and the ship-borne aircraft have proved adequate to all demands. But in any other kind of battle there might arise the need for the flying boat. A good example of the effective working of a massed force was provided in the great convoy battle announced in the Admiralty communiqué of June 20. It was on this occasion that the escort-carrier H.M.S. Biter (Captain E. M. C. Abel-Smith, R.N.) was announced in operation and that with it were a number of land-based Coastal Command aircraft. They included Sunderland and Catalina flying boats and Fortress and Liberator landplanes. The battle took place during May. On many other occasions there were similar examples of the use of massed forces of ship-based and land-based aircraft.

The pattern the Pacific war will take is by no means clearly defined as yet and here with like forces meeting like, not only the ship-borne aircraft but also the flying boat may be able to shoulder a larger responsibility than in other regions.

Every separate consideration of the conditions of the air war at sea during 1943, therefore, leads to the same conclusion ; that although the land-based landplane has, in fact, borne a larger part of the load during the year it has not conclusively demonstrated that it can or will ever be able to bear the whole load. The case for the ship-borne machine and for the flying boat is almost as strong as ever it was. And similarly the responsibilities of the different services remain interlocked and are not restricted or divided up by landplane developments and by the more extensive use of landplanes. Much of the misunderstanding on this and similar points has arisen from the over-simplification which is encouraged when a service is linked too firmly to the element in which it works. It is pleasing to the tidy mind to think of three separate kinds of war, that on the sea, that on the land, and that in the air. But all experience has gone to show that such tidiness has its dangers. It shares some of the characteristics of the tidiness of the ruthless spring cleaner who goes through a house like a raging wind and leaves it clean and clear but with most of the important documents gone. The air war at sea has given rise to a curious, somewhat untidy, and slightly illogical arrangement whereby the responsibility falls upon both the Royal Navy and the Royal Air Force in undefined degrees. But although untidy and illogical the method worked well.

Something must now be said in extension of the basic conclusion already stated, that the ship-borne aircraft has a future and that it will remain a machine of high importance. It has not produced any very remarkable progeny as yet. The Fairey Barracuda has been announced as the new British designed and built torpedo carrier of the Royal Navy. But at the time of preparing this article no details of this machine had been issued. More is known of the Grumman Avenger, which was called the Tarpon in the Royal Navy, though the name was later abandoned by the Admiralty, and which is also a torpedo carrier but intended to take the short, fatter American torpedo. This machine has earned high praise from those who have flown it, and it is in large-scale production so that it is likely to play a large and increasing part in both war over the Atlantic and over the Pacific. Ship-borne fighter advances have been confined to extensions of the uses of modifications of machines originally designed as landplanes. Thus the Seafire shows a development almost parallel to the land-based Spitfire. As one receives a new engine or fresh armament so does the other. The Americans, however, have introduced the Hellcat which is much the same as the Wildcat, or as we used to call it (the separate name has again been abandoned) the Martlet. It is a shortish, rather tubby looking fighter which is claimed to have excellent flying and fighting qualities.

These have been the ship-based air weapons. They were seen in action not only in the conflict with enemy submarines, but also in the important amphibious operations. A particularly notable and significant example was the Salerno landing. This took place on the morning of September 9. The site which had been selected for the establishment of a bridgehead was 160 miles away from the nearest good land bases for aircraft. The consequence was that during the first days a very large responsibility rested upon carrier-borne machines. They were supplemented when possible by long-range Lightnings, Spitfires and Mustangs, but they had to bear the brunt of the early part of the air battle. Seafires were prominent in this work and they succeeded so well in covering the opening operations that an airfield was captured at Salerno on the first day. But it was so badly damaged by German demolitions that it could not be effectively used, and once again the allied forces had to rely for their short-range air cover upon carrier-borne machines. It is of interest to notice here also that it was during the Salerno operations that the Germans were first reported as using the new rocket-driven chaser bomb or winged bomb. Mr. Hanson Baldwin, the *New York Times* correspondent, gave this information.

The general picture of the Salerno operations is one of a landing being made on a very strongly defended piece of coast at the extreme limits of the range of land-based fighters, the close support and fighter cover being largely the duty of ship-based machines. It cannot be said that the experiment was wholly successful, for in spite of strenuous efforts by naval pilots and ships' companies the land forces faced desperate opposition and appeared at one moment to be in danger of being dislodged. On the other hand, without adequate ship-borne forces Salerno would never have been chosen at all as a bridgehead in the circumstances then prevailing.

So much then for the direct intervention of ship-borne and land-based aircraft in the war at sea. I turn now to the indirect intervention. In this field there is the attack on enemy ports and submarine bases, on factories concerned in the manufacture of ships and their accessories and the laying of mines in enemy waters.

It would be hazardous to express any conclusive opinions upon the effectiveness of the bombing of submarine bases. It is still a matter of anxious controversy and is likely to remain so until all the facts have been assembled and published, and it has been possible for a number of understanding minds to consider them. While partial information only is available, only partial conclusions can be reached. The Germans appear to have reasoned comparatively early in the war on the basis that an armour-piercing bomb dropped from as great a height as was likely to be practicable had a given penetrative power, and that its penetrative power could be neutralised by a sufficient protective cover. The concrete pens for enemy submarines were the outcome of this process of reasoning, and the general impression that one gains, though, as has been mentioned, it must be looked upon as provisional, is that the reasoning was correct and that it has been possible so far to give adequate protection to submarines from air bombing. Theoretically this matter of protection has been studied fairly extensively and was well understood before war broke out. Although the ordinary armour-piercing bomb when dropped from a height of 25,000 to 30,000 feet has insufficient penetration to get through really deep armouring it has always been recognised that special bombs could be made more difficult to guard against.

A large bomb of appropriate external shape and cross-sectional density, for instance, can be theoretically visualised as accelerating to an ultra-high speed in a long drop from over 30,000 feet and being able to pierce the sort of shelters which the Germans have used on the French coast. But this kind of bomb has not been reported as having been employed by either side, and it would appear that on the whole the enemy has had the better of the battle between bombing and protection in so far as it concerns their submarine fleet. Fairly larges forces were employed by Bomber Command and the Eighth United States Army Air Force to attack the enemy's submarine bases. No doubt these attacks played their part in the success which was achieved during the year. But the external appearance at any rate is that this part was much less than was played by the direct attack. Once again, therefore, in this indirect field the ship-borne aircraft or the long-range aircraft working over the sea appears to have played a more useful part than the land-based aircraft working over the land.

Mine-laying has been another duty whose value it is difficult to assess. Very large numbers of sorties were made for mine-laying purposes during 1943, and generalised statements were issued to indicate that this mine-laying had had its effect. But once more the complete information which would enable that effect to be fitted into the general war picture is not available. The broader inferences are that mine-laying from the air is likely to have a more and more restricted use as other means of coping with enemy ships are evolved. Direct and aimed strokes are usually to be preferred to the blanket or screen effect. In other words the best way of using an aircraft against enemy shipping is still to be found when the aircraft can make a direct and deliberate attack rather than when it sows a region with mines or attacks a base with bombs.

In all these considerations, however, it must be remembered that the improvement in the organisational picture among the Allies is also to some extent a reflection of the improvement in the picture of numerical strength. I mean that the criticisms which were launched in the early stages of the war at the lack of collaboration between air power over land and air power over sea would not have had their acerbity had the Allies disposed a greater number of aircraft. In those days the Allies were weak numerically in aircraft and at the same time they used them in a manner that was not fully efficient. There is always the risk that lack of success may be attributed to bad planning or an inadequate organisational structure when, in fact, it should be attributed to the much simpler and more straightforward cause of lack of numerical strength. No matter how sound the Allied organisational structure had been in 1940 air power would never have made itself felt to a very large extent because of the lack of aircraft. And the converse is true. In 1943 Allied air power would have made itself felt however poorly designed the organisational structure.

It is of importance to keep this distinction clear, because without it the main issue may be sidetracked. In 1943, Allied air power attained a ratio of strength to enemy air power of approximately three to one. It is worth recalling that this was about the ratio in 1918. It sounds an overwhelmingly great superiority but unless there is the most stringent economy of use it may not turn out so to be in effect. In the German defensive measures of 1943, for example, it was noticeable that they exerted themselves only when they felt there was risk of powerful Allied attack on some target which had great importance to them. Allied fighter pilots frequently reported that when they went over German-occupied territory on fighter sweeps nothing would entice the German fighters to come up and challenge them. But the moment large bomber formations went out to attack some point of importance such as a shipyard or a submarine base, the Germans would send up powerful fighter formations and these formations would challenge the bombers with great pertinacity. This kind of careful husbanding of resources may to some extent outweigh the numerical superiority of the Allies and that is obviously Germany's intention. It has to be borne in mind also that the Allied strategical position is such that the drain on aircraft resources is much greater. The sea war makes a bigger call for aircraft from the Allies than from the Germans. The early days of long distance aircraft raiding on our convoys have not returned, and the Germans have not substituted any method of attack which makes deep inroads into their air resources. On the other hand, the Allies have progressively used more and more aircraft in order to deal with the German raids upon shipping. So the great Allied superiority does tend to be whittled away owing to the many purposes for which the Allies have to find aircraft and to the careful means employed by the enemy for reserving his fighter strength.

A few days before the end of the year two important naval actions were fought, but in so far as official communiqués have related the circumstances of them, aircraft played a part in only one of them. This was the sinking of three German destroyers and a blockade runner in the Bay of Biscay on December 29. On this occasion Coastal Command machines did useful work. But in none of these reports of sea actions is there any detailed account of the employment of ship-borne aircraft of the catapult variety. The Vickers-Armstrongs Walrus held a position for a long time as the chief catapult aircraft for being carried in warships, but there has been a gradual transference to new types, among them being two of American origin, the Vought-Sikorsky Kingfisher and the Curtiss Seagull, originally called the Seamew for Fleet Air Arm purposes. These are single-float seaplanes with wing-tip floats and are specialist designs for catapult use from warships. Great interest will attach to their performance in action, but comment must await official data.

Perhaps it is not too presumptuous to make an effort now in this fifth year of war to sum up the air position as it seems to be related to the sea position. In October there appeared in *The Times* newspaper a statement signed by Admiral of the Fleet Lord Chatfield, Field Marshal Lord Milne, Marshal of the Royal Air Force, Sir John Salmond, Lord Hankey and Lord Winster. It discussed the unity of all the arms that is needed in order to develop a maximum belligerent power. And it concluded that the three fighting services comprised in reality one service. " Only when the true meaning of total war is realised," it stated, " and all allegiances are merged into a larger patriotism can the full strength of a nation's belligerent power be developed. To attain the maximum belligerent power of a nation the pre-occupation of each service with its particular element must merge into an all round acceptance of the inter-dependence of the three services and of the home front. There must be understanding that battles are no longer to be won in a single element."

This is putting with a slightly changed inflection the views that I have ventured to express in Brassey's Naval Annual on previous occasions. I have called always for a military continuum in which sea, land and air power are merged and have suggested that air power must by the nature of the element in which it works permeate land and sea power. The war at sea in 1943 lent force to this argument. It was the year above all in which air power played a large part in the successful operations against enemy submarines as well as bearing a share in various separate actions, either from carriers or from land bases. It was a year which summarised the carrier-borne operation in support of a landing; the carrier-borne operation in protection of a convoy; the land-based operation in the attack on enemy warships; the land-based mine-laying operation; the land-based attack on enemy submarine bases; and the escorting of convoys by ultra-long-range land-based aircraft. In the Pacific there were actions in which air power and sea power worked together with no clearly marked dividing line between their regions of responsibility. All these events helped to elucidate the position and to show air power in its true light when used over the sea.

A final comment on this picture is provided by two important organisational steps that were taken towards the end of the year. They are not immediately concerned with the war at sea, but they show the trend of thought at this time. The first step was the formation of a new South East Asia Air Command under Air Chief Marshal Sir Richard Peirse, which was announced in New Delhi on December 19 by Lord Louis Mountbatten. This implied the merging of the Tenth Air Force and the Royal Air Force Bengal Command. It created a tactical and strategical air force after the Mediterranean pattern, the first being under Sir John Baldwin and the second under Brigadier-General Howard C. Davidson. Later in the same month the announcement was made that Air Chief

Marshal Sir Arthur Tedder was to be General Eisenhower's Deputy Supreme Commander of the forces assembled in the United Kingdom. Air Chief Marshal Sir Trafford Leigh-Mallory was named as Allied Air Commander-in-Chief and Air Marshal Sir Arthur Coningham as commander of No. 2 Tactical Air Force.

A footnote should be added about the introduction by the Germans of a new air weapon for attacking ships at sea. This was described by the Prime Minister in a speech in Parliament on September 21. It had previously been reported as being in use in the Mediterranean, and, as mentioned above, the *New York Times* had stated that the Germans used it at Salerno. It was usually called a gliding bomb, but this is a misleading term, for the facts as far as they are known at the time of writing appear to be that it is in fact a winged bomb with a form of rocket drive. It is, therefore, not properly speaking a glider. Some of the statements allude to radio direction. Others suggest that the bomb is stabilised and guided by a form of automatic pilot and that it is therefore almost an exact aerial parallel to the marine torpedo. It would be more correct to call this a chaser bomb, because it is rocket driven and does not rely simply upon a gliding angle to reach its target. No great technical difficulties in the construction of such a bomb can be seen, for the technique of automatic stabilisation and control is now well understood and rocket drive has been considerably developed in Germany as well as in Russia. The components of a chaser bomb of this kind, therefore, are all known and understood, and if the Germans decided that they would gain an advantage from employing such a weapon no reason can be seen why they should not do so and with a reasonable amount of success. But whether it would be confined, as it was during 1943, according to report, to attacks on shipping and convoys is another question. This is the only new air weapon to be used at sea and reported upon in any detail during the year. Taking the whole of the year and the whole of the developments into consideration it may be said that 1943 showed air power to its best advantage in the war at sea.

OLIVER STEWART.

CHAPTER V.

THE U-BOAT WAR.

A SURVEY OF DEVELOPMENTS.

" The U-boat warfare takes the first place in our thoughts . . . the British and American Governments have for some time past . . . given the task of overcoming them the first priority in all their plans. . . . Nothing is more clearly proved than that well-escorted convoys, especially when protected by long-distance aircraft, beat the U-boats." (***Prime Minister, House of Commons, February*** **11, 1943.)**

WHEN the naval history of the Second World War is written the most notable feature of the year 1943 will be found to be the mastery of the U-boats by the Navy and the R.A.F. For the first time both Services had been provided with sufficient forces to pass from the defensive policy of protecting convoys to the offensive one of attacking U-boats before they could make contact with the convoys.

This important contribution to ultimate Allied victory—for losses at sea hamper and delay our military operations—was achieved by a combination of arms rather than by one, more particularly by a larger number of all arms, with an increase also of speed in escort ships and of range in aircraft. Then, in the autumn, the strategical position was greatly improved by the capitulation of Italy, and the withdrawal of some of her U-boats, and the Atlantic situation was largely changed by the Allies being granted the use of the Azores.

A measure of the German failure to achieve success with their main naval force is shown in the various changes in U-boat tactics. At the outbreak of war, they adopted the short-range, " precision," submerged attack on individual targets which had been used in 1917–18. But immediately they were faced with a new problem, that the British Navy had in the asdic what was lacking in the war of 1914–18—an efficient means of detecting and hunting a submerged submarine.

The U-boat was mastered in the first nine months of the war ; but the capitulation of France removed the French escort forces, gave the enemy the use of the Bay of Biscay ports as U-boat bases, and Italy's declaration of war, among other factors, added another 100 U-boats to those of Germany.

WOLF-PACK TACTICS.

Taking advantage of the British lack of aircraft protection—Fleet Air Arm fighters were employed in the Battle of Britain and other military operations—and of escort vessels, the enemy attacked our convoys with aircraft and developed the U-boat " wolf-pack " attack. Concentrated by information from submarine, aircraft or shore base, and making use of their superior surface speed, U-boats shadowed convoys by day, overtook them after dark and made " browning " attacks on whole convoys. Their actual use was largely as night surface torpedo boats, rather than as submarines. The object was to out-manœuvre the weak escorts by drawing off warships to attack U-boats, thus reducing the screen and enabling other submarines to attack through a further weakened defence.

The year 1941 was notable for two special naval efforts to deal with the air menace to our convoys : (1) C.A.M. ships, and (2) the small aircraft-carrier. Catapult-armed merchant ships, carrying Hurricane fighters, were introduced in the spring of 1941 for the protection of convoys against the long-range Focke-Wulf Kuriers operating with U-boats in the Atlantic. The first escort-carrier, H.M.S. Audacity, an ex-German merchant ship, escorted an outward-bound Gibraltar convoy in September, 1941. She made four voyages as a carrier before being sunk by a U-boat, and on one voyage, in five days her Martlet pilots sighted no less than 17 U-boats on the surface and directed destroyers on to them. During her brief career her aircraft destroyed five Focke-Wulfs and damaged three others, and contributed to the sinking of three submarines and the scuttling of a fourth.

" In the last half of 1941," as the First Lord of the Admiralty informed the House of Commons on March 3, 1943, " the U-boat threat seemed to be under control. The shipping losses were less than in the two previous six-monthly periods and we were killing U-boats faster." Then in December, 1941, Japan's entry into the war added two great oceans in which our shipping was menaced and, despite the accession of the large American Navy to our side, escort vessels intended for the Atlantic had to be diverted elsewhere.

U-boats at first found easy targets among the unescorted shipping off the North and Central American coasts and, in the first half of 1942, these sinkings were as much as three-quarters of the total losses. With the adoption of the convoy system in American waters, the losses were checked and at the end of the year were only a small part of the whole. On October 18, 1943, the American commander of the Eastern Sea Frontier said that " only three ships had been sunk in that area since July, 1942, and since September 1, last, not a single ship had been sunk there."

When the American coast offered diminishing returns the U-boats appeared to have pursued two main policies. First, they concentrated on the mid-Atlantic area where air cover was most difficult to provide and, secondly, attacks by other U-boats were extended as far as possible over the main shipping routes. By the use of supply ships, and " milch cow " supply U-boats of great endurance, their " packs " sought to replenish themselves at sea and undertake patrols of long duration. Although our aircraft attack was not so lethal as that of surface ships, during 1942 more than half of the attacks estimated to have caused damage or destruction to U-boats were made by aircraft.

POSITION EARLY IN 1943.

During the three months December, 1942 to February, 1943, merchant ship losses were much less than in the previous winter, despite considerably larger forces of U-boats and the added burden of maintaining the additional military and air forces in French North Africa.

The Prime Minister, in a review of the U-boat campaign in the House of Commons on February 11, said :—

> " The rate of killing of U-boats has steadily improved. From January to October, 1942, inclusive, the rate of sinkings, certain and probable, was the best we have seen so far in this war, but from November to the present day, a period of three months, that rate has improved more than half as much again. At the same time, the destructive power of the U-boat has undergone a steady diminution since the beginning of the war. In the first year each operational U-boat that was at work accounted for an average of 19 ships ; in the second year for an average of 12, and in the third year for an average of 7½."

Aircraft-carriers had proved most valuable for convoy protection against U-boats in the North African and Russian convoys and elsewhere, and naval aircraft had had a share in the destruction or damage of a considerable number of U-boats. Further to reduce the loss of shipping, the decision had been made to increase the output of escort ships, even if this interfered with merchant-ship building. The faster and heavier type of corvette, the frigate, was already in service.

GERMAN SPRING OFFENSIVE.

Meanwhile the Germans were making preparations for a U-boat spring offensive on the largest possible scale. At the end of January, Admiral Doenitz, a fanatical believer in the power of the U-boat to win the war for Germany, replaced Admiral Raeder as Commander-in-Chief of the German Navy. He owed his appointment to his record in the U-boat war ; to Germans he was the " Rommel of the Sea." " Britain," he said, " can only be defeated at sea. Her shipping lanes—her life-lines—must be cut ; this is what our U-boats and M.T.B.'s are doing." Berlin radio stated that auxiliary cruisers were to co-operate with U-boats ; Stockholm later reported a German order for all naval personnel to undergo U-boat training, and, in March, it was officially announced that Hitler had halted all German naval construction except submarines.

An article in the *Hamburger Fremdenblatt* expressed German expectation about the new phase of the war at sea. In part it said :—

> " We started on this new year of naval operations as it were under the slogan ' totality of U-boat warfare,' which means that German U-boat warfare is equivalent to German naval warfare as a whole. We thus took the decisive step of uniting all naval forces and concentrating on the one weapon which fate offered to us. . . . The development of submarine warfare in both attack and defence, is gathering momentum and is now approaching the stage of a final decision. We are under no illusion about the enemy's counter-measures, which are becoming increasingly extensive. The enemy's numerical strength in men and material is increasing month by month. . . . Victory demands the utmost perseverance and requires that we should hold out ' five minutes ' longer. . . ."

This concentration on U-boats was no new thing, in fact the energy which the enemy was putting into their construction was indeed formidable. The *Militarische Korrespondent aus Deutschland* stated that great progress had been achieved by the introduction of fixed types, standards and simplifications ; claimed that in some shipyards the man-hours required to build a U-boat had been reduced by 40 to 50 per cent. since the beginning of the war, and that similar economies had been effected in the use of raw material ; copper, for instance, having been reduced to 50 per cent. and tin to 30 per cent. At the same time it was claimed that there had been no falling off in quality. " The race between Anglo-American ship-building and German sinkings is being decided more and more with mathematical certainty in Germany's favour."

An authoritative spokesman in Washington in January mentioned a figure of 100 U-boats at sea in the Atlantic, and Rear-Admiral Nelles, the Chief of the Canadian Naval Staff, stated, that U-boats were increasing at an average rate of ten a month. In April the United States Navy Department estimated Germany had between 400 and 500 U-boats, with about one-third at sea at any time. It was generally accepted that the Germans were building U-boats faster than the Allies were destroying them, though the gap was being reduced, and that there was a greater number at sea than ever before.

Berlin radio on March 18 stated that a new U-boat offensive was being launched and at the end of the month Washington announced that March had been the worst month of 1943 for sinkings by submarines, but that the total was far lower than for almost any month in 1942.

ALLIED COUNTER-MEASURES.

The increase in forces, however, had not been confined to the enemy. While the Germans were building up their U-boat strength for an " all-out " effort, the Allies were also increasing their escort vessels and aircraft, as well as merchant ships. Thus when Germany launched her spring offensive the Allies, for the first time, had sufficient anti-submarine ships and aircraft, not only to counter, but also to defeat the enemy.

The problem was where best to attack the U-boats? At sea there was the dangerous gap in mid-Atlantic, which could not be adequately bridged by shore-based aircraft from either coast and where the majority of Allied ships were being sunk; another promising area was the Bay of Biscay, used by practically all the U-boats in sailing from or returning to their bases. Ashore were the U-boat refitting bases and the building and assembling yards, targets only for Bomber Command.

The main objective was to attack the U-boats before they could attack a convoy and either destroy them or, failing complete success, force them to submerge so that their low under-water speed would prevent them from closing their target. A great factor in the defeat of the U-boats was the increase in the strength and speed of escort vessels, details of which were naturally not disclosed but became partially evident in the official announcements and eye-witness accounts of convoy battles during the year. Additional escort ships made vessels available to hunt U-boats at a distance, before they closed to torpedo firing range, without reducing the convoy's close screen. In particular, they enabled " free-lance " groups of escorts to be provided, which remained some days in mid-Atlantic and strengthened the escort of both east and west-bound convoys by crossing and re-crossing the danger zone with several convoys.

The air gap in mid-Atlantic was bridged in two ways: (1) V.L.R. (very long range) aircraft, and (2) escort-carriers converted from merchant ships. V.L.R. aircraft with fuel capacity sufficient for them to patrol over the danger zone were employed from both sides of the Atlantic, but the distance from base was such that they could not remain for long in the area. Furthermore, bad weather often prevented them from operating at all and convoys then had to rely on their own resources.

The obvious solution was ship-borne aircraft with every convoy, preferably in carriers, because, unlike shore-based aircraft, such machines would be always available when required. Colonel Knox, the United States Navy Secretary, on March 26 announced that the American Navy had dozens of auxiliary aircraft carriers in commission. The British Navy, having used this type of vessel for 18 months, presumably also had a number in service.

The Bay of Biscay was mainly an aircraft problem. To reduce Coastal Command daylight attacks on U-boats the Germans made all possible use of darkness for sailing from, and returning to, their bases. A new feature, since the autumn of 1942, was the aircraft use at night of the Leigh light, a powerful searchlight for hunting U-boats in the darkness and attacking them or calling in warships for the " kill."

Nevertheless, there "was a certain opposition from unexpected quarters. . . ." as disclosed in a broadcast on October 29, 1943, by Air Chief Marshal Sir Philip Joubert.

> "You can well imagine that many crews took a very poor view of flying about showing a million-candle-power light. Fortunately, the tactics employed give the maximum element of surprise, at what is now regarded as a reasonable risk. There is no doubt at all in my mind that the introduction of this searchlight altered the face of the air anti-submarine war. Like the all-round-the-clock bomber offensive, it makes our anti-submarine attack infinitely more harmful and dangerous to the enemy. At no time can a U-boat captain rest his crew or ventilate his ship free from the danger of attack. And it is an attack that comes out of the dark of the night, swift and merciless, and with only a few seconds warning."

PROGRESS OF THE BATTLE.

No official indication of the progress of the U-boat spring offensive was given until the middle of April, when the Prime Minister stated that the Allies were more than holding their own against the U-boats. At the end of the month, Colonel Knox announced that submarine sinkings in April were much lower than in March and from various indications it was deduced that they were less than half. April was one of the best months for U-boats attacked and destroyed by the R.A.F. and the Air Ministry released details of a four-days' series of encounters between Coastal Command and a U-boat pack in the Atlantic.

The first official details of a convoy battle since the U-boat spring offensive began, were those of a series of attacks by a "wolf-pack" on a west-bound Atlantic convoy at the end of April and beginning of May. Ten escort ships were mentioned by name in the announcement—there may well have been more—which gave an indication of the increased escort strength.

Some eight U-boats attacked at first, but a gale then caused the suspension of operations for three days. By this time about 25 U-boats had assembled, and the convoy was still outside the "air umbrella" of the Canadian Air Force, though aircraft attacked the U-boats as soon as possible. Some thirty attacks were made on the convoy, but counter-attacks resulted in four U-boats being definitely destroyed—two rammed and two by depth-charges—and six more adjudged probably destroyed. Eventually the U-boats retired and the majority of the ships reached their destinations.

May was notable for further marked success against the U-boats, with a five-day convoy battle against them, and, among other R.A.F. successes, the sinking by Coastal Command, by depth-charges, of five U-boats in ten days, as far afield as the Atlantic, Northern Waters and the Bay of Biscay. These encounters were noteworthy for the fact that some of the U-boats showed a new marked tendency to remain on the surface and try to fight back against the aircraft with their anti-aircraft guns.

The announcement (June 20) describing the May convoy battle was the first of the year to refer to an escort-carrier, H.M.S. Biter. Coastal Command aircraft also took part. Two convoys were concerned in what was officially described as "one of the fiercest and most sustained offensives ever mounted by U-boats."

> "The battle . . . ranged over hundreds of miles, and extended intermittently throughout five days and five nights. So effective were the counter-attacks of the air and surface escort forces that most of the engagements were fought many miles distant from the convoys. During these actions two U-boats were destroyed, three were probably destroyed and others may have been damaged. Ninety-seven per cent. of the ships forming the convoys reached harbour . . . without having been molested. . . ."

The number of U-boats sunk in a month (May) was announced for the first time by the Prime Minister at the end of June. It was 30, a greater number than in any previous month and, for the first time, also, U-boat losses exceeded new construction. The tide of the U-boat war had turned.

These heavy losses caused the withdrawal of many U-boats allegedly for re-armament, but really because of the increased efficacy of Allied convoy protection. German comment was anything but heartening to their people. Early in the month Berlin radio announced re-grouping of U-boats; a German naval spokesman later praised the efficiency of British anti-submarine measures and, at the end of the month, the German radio admitted a reduction in sinkings by U-boats.

CHANGES IN GERMAN A.A. TACTICS.

Hitherto U-boats had shown a healthy respect for aircraft, invariably diving in an attempt to avoid their attacks and then re-surfacing. This policy worked well against infrequent air patrols, as for most of the time their absence allowed the submarines to proceed unmolested at high speed on the surface. In the late spring, however, it was obvious to the enemy that with our mounting air offensive U-boats were being "put down" for lengthy periods and their mobility largely destroyed, so that many could not gain contact with convoys.

A change in tactics became essential and U-boats were ordered to remain on the surface and fight it out, relying on their manœuvrability, speed and flak to counter the air menace. Apparently, what was not appreciated was that even in fine weather a submarine is not a stable gun platform, and in bad weather an unsatisfactory one. Aircraft seized their opportunity with both hands and destroyed or damaged a considerable number of U-boats, the outer Bay of Biscay being their happy hunting-ground.

The enemy pursued their new policy for a couple of months, but by June the Germans realised that other measures were necessary to reduce their losses. Another new method was adopted, which caused the aircraft trouble for a time, but eventually did the U-boats no good at all. They endeavoured to make the outward and inward passage of the Bay in groups of three to five, with the object of combining their flak for mutual protection. Their anti-aircraft armament was increased and U-boats in groups presented a pretty formidable target for aircraft to attack.

The aircraft reply was to amend their tactics and it was left to the decision of the aircraft captains, on sighting submarines, whether to attack alone or signal to other aircraft or ships in the vicinity for support. The result was single aircraft attacks, co-ordinated attacks by several aircraft, and combined attacks from aircraft and surface ships; and, though not without losses, the R.A.F. claimed to have achieved its first real victory in the Battle of the Atlantic. After some months of this unsuccessful policy, the U-boats reverted to their old game of trying to "crash-dive" on sighting aircraft, but frequently they were caught napping on the surface and fierce anti-aircraft engagements continued to ensue.

OFFICIAL MONTHLY STATEMENTS INSTITUTED.

The position in June was given in the first official British and American joint monthly statement published on July 10. Similar statements were to be issued about the 10th of each month.

> "The number of targets offered . . . was not as great in June as previously, but the sinkings of Axis submarines were substantial and satisfactory. The heavy toll taken . . . in May showed its effect in June, in that the main transatlantic convoys were practically unmolested, and the U-boat attacks on our shipping were in widely separated areas. However, every opportunity was taken of attacking U-boats leaving and returning to their bases on the west coast of France. . . ."

July was notable for the announcement of successes by two escort-carriers, one British and the other American, which now formed such an important factor in the defence of ocean convoys. The Admiralty also announced that two U-boats were sunk in nine hours by an escort group of sloops in the Atlantic; another was sunk by Coastal Command in the Bay of Biscay.

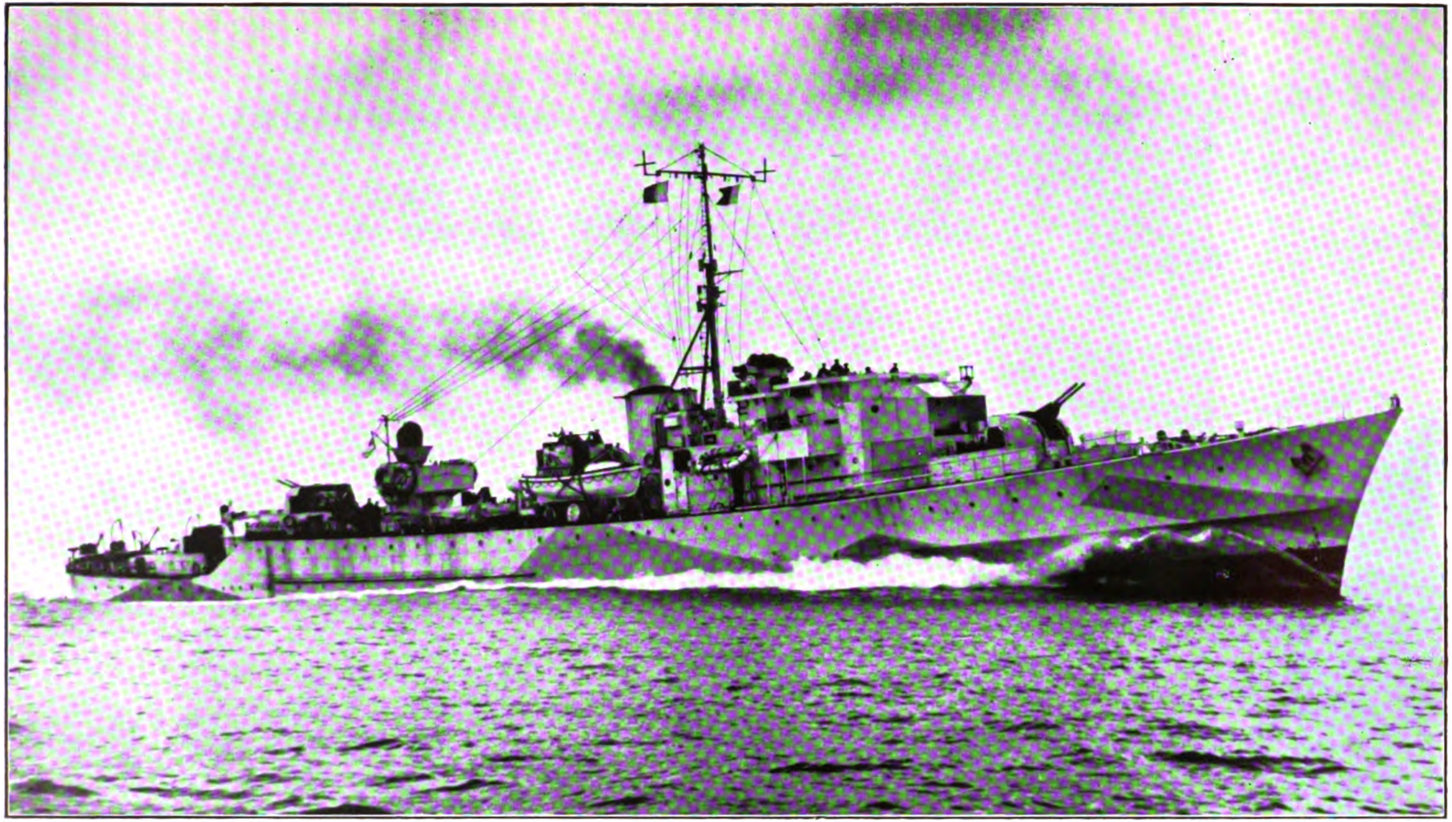
The United States Navy Department announced, on July 16, that an auxiliary aircraft-carrier, in protecting two convoys, had sunk two U-boats and probably sunk ten more. A later announcement stated that the United States non-rigid airship Atlantic had been brought down by a U-boat's anti-aircraft gunfire and thus showed the vulnerability of these craft when attacking U-boats on the surface.

The British *communiqué*, on July 3, concerned the passage of an east-bound convoy, probably in June, and was another example of the complete shore-to-shore air cover provided for convoys crossing the Atlantic. Close cover was provided during the initial stage of the passage by the Royal Canadian Air Force and during the final stage by Coastal Command. The mid-Atlantic gap was bridged by aircraft from the escort-carrier H.M.S. Archer.

A series of air encounters occurred lasting two days, during which five U-boats were attacked, four by naval aircraft and one by Coastal Command: (1) on the surface; (2) at periscope depth many miles from the convoy, probably destroyed; (3) by Coastal Command aircraft; (4) on the surface; and (5) on the surface, about fifteen miles from the convoy, sunk and survivors picked up. The convoy made a safe passage and from then on was unmolested. This was the first time a U-boat sinking was officially credited to aircraft operating from an escort-carrier without the aid of surface ships.

The monthly British and American statement for July (August 14) covered three months and was the most encouraging so far issued. During May, June and July 90 U-boats had been sunk—an average of nearly one a day—and Washington later announced that British and Allied Navies had sunk 61 and the U.S. Navy 29. "The steady flow of transatlantic supplies has continued unmolested, and such sinkings as have taken place in distant areas have had but an insignificant effect. . . . July is probably our most successful month, because imports have been high, shipping losses moderate, and the U-boat sinkings heavy."

The 2,500 ships involved in the descent upon Sicily, the statement continued, had scarcely any interference from U-boats, and the losses were only about 80,000 tons; but U-boats which attempted to interfere suffered severe losses. New Allied shipping tonnage during 1943 exceeded all sinkings from all causes by upwards of 3,000,000 tons.



Hunt class Destroyer. H.M.S. Brecon on trials.

(Courtesy of Messrs. Thornycroft.)

The end of a U-boat in the Bay of Biscay. Depth charges from a Sunderland aircraft bursting in contact.

(*Official photograph. Crown copyright reserved.*)

Early in August a joint Admiralty and Air Ministry statement told how, a few weeks earlier, a force of 25 to 30 U-boats, concentrating in a North Atlantic shipping lane, was for two days and nights subjected to such relentless assaults by surface escorts and Coastal Command aircraft, working in co-operation, that the enemy was prevented from launching even one attack against a large east-bound convoy. Two U-boats were destroyed and a third probably destroyed.

On August 27 Washington announced that at least ten U-boats had been sunk or damaged by American Liberators, and Sir Arthur Salter, of the Ministry of War Transport, stated that the shipping picture was now brighter than at any time during the war.

The monthly British and American statement for August showed a further improvement in the shipping position.

> " August has been another successful month in U-boat warfare. Owing perhaps to re-armament and other causes there appear to have been fewer U-boats at sea than in recent months, and shipping losses have continued to decrease. It is significant that the enemy made no attempt to attack North Atlantic shipping, and opportunities for attacking the U-boats have been relatively few. Nevertheless, U-boats have been hunted relentlessly on all stations wherever they have appeared and a heavy toll has been taken of the enemy. In fact, more U-boats have been sunk than merchant ships.
>
> " Surface and air forces have both contributed to this satisfactory month's work by the efficiency of their escorts, patrols, and offensive operations. Shore-based aircraft have often had to face powerful enemy air opposition, and carrier-borne aircraft have played a most important part. . . ."

To counter the enemy's attempts to send groups of submarines in company across the Bay of Biscay, our naval and air patrols were increased and, on September 6, the Admiralty announced the sinking of seven U-boats in the Bay. This gave an example of ship and aircraft co-operation whereby a notable victory was scored, in less than six hours, against a group of three U-boats, which included two of the enemy's scanty force of " milch cow " supply submarines. The other four were sunk by aircraft. This was the first account published of a " free-lance " group of sloops operating in the Bay in support of shore-based aircraft.

Allied losses, in what the Air Ministry described as the greatest single victory of the war against U-boats operating in the Bay, were two aircraft, with only a single survivor from one, but the crew of the other was saved.

It was at this time (September 8) that Italy capitulated, and so changed the whole balance of naval power in Europe. Such Italian U-boats as were free from German control, and fit for sea, sailed for Allied ports, and on October 21 a Rome (enemy-controlled) announcement stated that Italy had lost 84 submarines—some four-fifths of the number with which she had entered the war.

The Prime Minister, in a review of the war situation in the House of Commons on September 21, said that the U-boat war must be measured by three tests : (1) sinkings of our own ships ; (2) killing of enemy U-boats; and (3) volume of new building.

> " The great victory which was won by our North Atlantic convoys . . . in May was followed by a magnificent diminution in sinkings. . . . For the four months which ended on September 18 no merchant ship was sunk by enemy action in the North Atlantic. . . . August was the lowest month we have ever had since the United States entered the war and it was less than half the average of British and Allied sinkings in the fifteen months preceding the American entry into the war. During the first fortnight in this September no Allied ships were sunk by U-boat action in any part of the world. This is altogether unprecedented in the whole history of the U-boat struggle either in this war or in the last. . . ."

Mr. Churchill, however, gave a warning that " A new herd of U-boats has been coming out in the last week or so into the Atlantic. . . . One convoy is being attacked at the present time. . . ." He also stated that Allied air attacks on selected targets in Germany had " definitely reduced the rate of production of U-boats," and that the high percentage of sinkings had certainly affected the morale of the crews ; many of the most experienced captains had been drowned or were prisoners of war.

> The credit balance of new building over losses . . . since the beginning of the year . . . exceeds 6,000,000 tons and should the present favourable conditions hold we shall soon have replaced all losses suffered by the United Nations since the beginning of the war. . . ."

The Prime Minister also referred to the effect on the favourable position of the aircraft attack on U-boats :—

> " Most of all, so far as last year is concerned, it is the result of the startling intervention of the long-range aircraft. . . . Besides this the large numbers of auxiliary aircraft-carriers which are now coming into service are able to give a measure of air protection to convoys and to conduct an aggressive warfare against U-boats in those ocean spaces which are beyond the reach of even the V.L.R. aircraft. . . ."

The convoy attack to which the Prime Minister referred was dealt with in the British and American statement :—

> " Until the third week in September no Allied merchant ship was lost by German U-boat attack. Then on September 19 the U-boats ended the four months' lull in the North Atlantic, and a pack of at least 15 U-boats concentrated on a west-bound convoy. The combat lasted four and a half days. The loss of three escort vessels has already been announced. A small number of merchant ships were sunk, but as a result of vigorous counter-attacks by the surface and air escorts a larger number of U-boats were sunk or damaged.
>
> " In spite of the increase in U-boat activity at the end of the month, the average merchant ship losses from all causes in September and August together are the best record of the year. . . ."

A Canadian report stated that six merchantmen had been torpedoed which, if this figure were correct, meant that, as more submarines were sunk or damaged than the number of merchantmen sunk, more than half the U-boats had received greater or lesser damage during the encounters.

This new U-boat pack attack on an Atlantic convoy was of interest not only because it marked the end of the four months' lull—at the time the view was expressed that it might mark the opening of an autumn offensive—but also because of the first public mention, albeit only from survivors, of the enemy's use of an acoustic torpedo.

The next notable event in the anti-U-boat campaign, was the granting by the Portuguese Government to the Allies, on October 12, of facilities for ships and aircraft in the Azores, whereby they could operate over a large area in the central North Atlantic which had hitherto been impossible for them. Previously full protection by surface and land-based escorts could only be provided right across the Atlantic by routing convoys within the necessary range from Iceland and Greenland ; henceforth it was possible to use the Azores for this purpose and thus to give the same protection much farther south—a very great advantage during the season of winter gales. Furthermore, similar protection was possible for South Atlantic convoys for a much greater distance, and aircraft attacking U-boats on passage into, or out from, French ports were able to cover a larger area than when working from Britain alone.

The British and American monthly statements for October and November gave a good summary of the U-boat war during those two months. That for October read :—

> "During . . . August, September, and October approximately 60 U-boats were destroyed. This brings to more than 150 the number of U-boats destroyed during the last six months. The record of the last three months is particularly gratifying because . . . fewer targets were presented for our air and sea forces. During August, September, and October more U-boats were destroyed than Allied merchant ships were sunk by U-boat action. The ratio of U-boat to merchant ship attrition during October was more satisfactory than in any previous month. Our tonnage losses from all causes in October were the second lowest of any month of the war.
>
> "Merchant ship tonnage lost to U-boat action during the last three months was less than one half the merchant ship tonnage lost during the previous three months, despite the fact that actual shipping increased.
>
> "The Germans have introduced new U-boat weapons and tactics. Thus far we have been able to cope successfully with the changing situation. The battle continues in full vigour."

The next statement read :—

> "Anti-U-boat operations in November have been notable for the little the enemy has achieved for the great effort he has exerted. The number of merchant vessels sunk by U-boats in November is smaller than in any other month since May, 1940.
>
> "By means of aircraft operating from the Azores, we have been able to improve the protection to our convoys and to diminish the area in which enemy U-boats were free from attack by our forces.
>
> "The enemy has used long-range aircraft to assist in concentrating U-boats on our convoy routes. In spite of this our escort and counter-attacks have been effective. The caution of enemy U-boats has lessened the number of opportunities given to our forces for strikes at them. Nevertheless, the number of U-boats sunk in November has again exceeded the number of their victims."

Three official statements were made during December of ships' and aircraft's successes against U-boats and gave further indications of the intensification of attacks on enemy submarines. On December 5, the Air Ministry released the story of the sinking of six U-boats—three within 24 hours—by aircraft alone, during operations which covered a period of eight days—apparently in October. In two separate and decisive defeats, the second of which took place in bad weather and was described as "one of the most decisive victories of the anti-U-boat offensive," such severe losses and damage were inflicted upon two large U-boat packs, totalling 12 submarines, that they were forced to abandon their attempts to join battle with three transatlantic convoys. One aircraft, which last reported attacking a U-boat, was lost.

Six days after the Air Ministry statement, a joint Admiralty and Air Ministry statement announced another decisive defeat of a large concentration of U-boats in the Atlantic, whereby five were destroyed and three damaged. Vigorous offensive action by ships and aircraft, working in co-operation, prevented the enemy from launching any concerted attack on two valuable convoys and more than 99 per cent. of the ships reached harbour in safety. This series of engagements, which lasted for two days and nights and covered a large area, was notable for the U-boats' attempt to prevent accurate bombing, by remaining on the surface and using their anti-aircraft guns. Although this attempt was unsuccessful, because of the determination with which the pilots pressed home their attacks, three aircraft were damaged, two making forced landings in the sea, and casualties were incurred, but survivors were rescued by the ships.

On December 17, for the second time in a week, an official account was issued of successful action against U-boats in the North Atlantic, whereby another two were destroyed. The U-boats were subjected to such relentless assaults by an escort group of ships and aircraft that the enemy was prevented from launching even one attack against two valuable west-bound convoys.

Further information about the attacks on U-boats referred to in the last two announcements was given by the second-in-command of the senior officer's ship of the group, and provided an example of the work of a "free-lance" escort group. The group spent 25 days at sea, during which they crossed the central part of the Atlantic six times, steamed 7,000 miles, and assisted, as required by the changing situation, in the protection given to five different convoys. Four of these convoys were either attacked or threatened with attack. Two of the attacks were averted because ships destroyed the U-boat before she could gain contact, perhaps before she had even seen the convoy; and the total loss was less than half of 1 per cent. of the ships guarded.

Three weeks later (January 8) another Admiralty *communiqué* announced that, some weeks earlier, two U-boats had been sunk in eight hours, during a patrol by another "free-lance" group of sloops north-west of the Azores. The first U-boat, a large patrol or supply boat, was encountered at night and depth-charged. She dived deep and proceeded very slowly, in an unsuccessful attempt to elude her pursuers. As the night was very dark, it was decided to postpone further attacks until daylight. Accordingly for four hours one sloop, closely attended by two others, kept in contact with the enemy. At daybreak the depth-charge attack was resumed and, in a few minutes, the U-boat was sunk. The second submarine was detected early in the afternoon and sunk by a joint depth-charge attack by two sloops.

The first hunt was notable for the confidence in the detection apparatus whereby the senior officer felt justified in delaying his final attack until daylight, to make certain of success, without any fear of losing contact with his submerged quarry during the ensuing hours of darkness.

Some details released of the achievements of H.M.S. Biter, previously mentioned, gave an example of the work performed by escort-carriers. Her active career started in April, 1943, and in the following month she took part in fighting "one of the fiercest and most sustained offensives ever mounted by U-boats." In nine months she steamed more than 45,000 miles in the protection of convoys, and not a single merchant ship under her escort was lost by enemy action.

Her pilots performed, as a matter of routine duty, feats which would have been considered impossible when these small carriers, with a flight deck only 450 feet long, were first put into service. Weather, which would have kept her aircraft grounded even at a shore air station, and which caused the ship's flight deck to rise and fall as much as 50 feet as she pitched, did not prevent them from taking off and landing on, and from patrolling in defence of convoys throughout the day. The result was a record of shipping successfully defended which could not be improved.

The British and American monthly statement for December, in addition to dealing with the month, gave a comparison with 1942, of shipping losses and new construction in 1943, and the proportion of the losses in certain periods of 1943.

> "Total merchant ship tonnage lost by U-boat action in December was again low despite an extension of operating areas. Fewer U-boats were destroyed during the month by our air and sea forces owing to several factors, including increased caution by the enemy. Our supply routes were, however, well secured against U-boat attack.
>
> "In 1943 U-boats sank but 40 per cent. of the merchant ship tonnage that they sank in 1942. On the other hand United Nations merchant ship tonnage constructed in 1943 approximately doubled the tonnage delivered in 1942. Nearly half of our tonnage lost for the year 1943 was during the first three months: 27 per cent. was lost during the second quarter of 1943, and only 26 per cent. was lost during the last six months."

SUMMING UP.

The German High Command, no matter from what angle they viewed the situation, must have realised by the end of the year that their much-vaunted U-boat campaign, which was to win the war for Germany, was a failure—in fact they had as good as said so. Radio and other authoritative German announcements throughout the year were remarkable for their admissions of the deterioration in the U-boat effort. At first excuses were made for reduced sinkings of Allied merchant ships but, even as early as July, Admiral Lützow, the German naval commentator, confessed that the Allies "had the upper hand." Then, at the end of the year, Admiral Gadow, the German naval writer, in the *Deutsche Allgemeine Zeitung* made an even more startling admission : "A change has taken place in the U-boat war," he said. "The Allies have gone over to the offensive and the U-boats are on the defensive. The success of the aircraft-carrier in the protection of convoys cannot be doubted. This weapon is playing an important part in operations in Europe and Eastern Asia. . . ." Even Admiral Doenitz, the Commander-in-Chief, as late as January, 1944, when he addressed the fifth nautical session in Stettin admitted that the Allies had "succeeded in gaining the advantage in submarine defence." For the strict German censorship to allow flag officers of Admiral Doenitz's and Admiral Gadow's standing to make such damaging statements was a measure of the quandary they were in and appeared to be paving the way for the admission of further reverses in the new year.

The U-boat sinkings of Allied tonnage had been so reduced as to have practically no braking effort on Allied military operations and armaments output, or even on the food standard of Great Britain. A Washington broadcast in November stated that the rate of loss in Atlantic convoys during the past six months had been less than half of one per cent. Thousands of ships had been escorted across the Atlantic. The German military high command had thus received little or no help from their navy, at a time when they had been promised much, in the prevention of the largest armadas in the world's history landing, first in North Africa and then in Sicily and Italy, large modern armies and all their impedimenta.

On the other hand, the large losses of U-boats must gave caused concern not only in the German Admiralty, from the point of view of policy and strategy, but also among surviving crews. Rear-Admiral Low, U.S.N., in a broadcast in November, said the American Navy had evidence that the Germans were conscribing crews for the submarine service and added : "This may indicate that morale is beginning to crack." Another possible sign that morale was falling was that towards the end of the year U-boat captains were not pressing home their attacks to the same extent as they did earlier in the war, though undoubtedly one of the reasons for that was that the Germans had lost a number of their most experienced and capable captains.

Threats of new tactics and secret weapons had been made from time to time, mainly in an attempt to bolster up home as well as naval morale. For instance, Admiral Doenitz, in his address, rather belatedly threatened : "We shall catch up with the enemy. The day will come when I shall offer Churchill a first-rate submarine war," and added that he would "smash the British supply with a new submarine weapon" this year

(1944). The submarine weapon, he said, had not been broken by setbacks. On the contrary it had become stronger!

But the trial, earlier in the war, of the magnetic and then the acoustic mine, and combinations of them, and more recently the glider-bomb, rocket-shell and acoustic torpedo, all with some initial but decreasing success, seemed to indicate that the potentialities of new " secret weapons " might be limited. Furthermore, those which had been produced were promptly countered. Admiral Low, in his broadcast, stated that the American Navy was taking counter-measures against the acoustic torpedo, as no doubt was the British Navy. " We don't pretend to know all the answers," he said, " but we have no doubt but that we shall develop satisfactory methods."

From the Allied point of view, the summary of shipping losses given in the December monthly statement provided the best criterion, from the official information made public, of the success of the anti-U-boat war in 1943. With additional overseas commitments in Italy and elsewhere, and a greater volume of tonnage at sea, for these losses to be only two-fifths of those for 1942, and of this amount a greatly decreasing proportion since the first quarter of the year, with only a quarter during the last half-year; was in itself a great achievement.

Of U-boat losses, the only official figures released were those of the 150 destroyed in the six months, May–October inclusive, at an average rate, in the first three months, of one a day. Even though the average U-boat losses may not have been at a greater rate than new construction over the whole year, there certainly were appreciable periods when they were. Admiral King, U.S. Chief of Naval Operations, said in December that German submarine losses have reached a new peak. . . . We can say that the methods we have been using have proved effective . . . " and the scheme to make the Atlantic an exclusive German thoroughfare has been thwarted. . . ."

With the official figure of 150 U-boats sunk in six months, the number destroyed during 1943 may well have exceeded 200 and perhaps 250—or half the number in service at the beginning of the year. This is a rate of loss which no submarine service could stand for long, either in boats or crews. Moreover, with increasing Allied naval and air escorts, a similar, if not greater, rate of loss is possible of any U-boats which attempt to press home their attacks. Admiral Low, in his broadcast, said despite the reported new weapon, the U-boat fleet was " now bent if not broken. . . . We estimate that their remaining strength is in hundreds. We feel sure that the rate at which they are being sunk they cannot be making great gains."

Allied merchant ship construction was double that of 1942, with a credit balance over losses of 6,000,000 tons in the first nine months and, before the end of the year, the replacement of all losses suffered by the United Nations since the beginning of the war. Furthermore, shipyards on both sides of the Atlantic were still producing vessels at a high rate.

Thus, judged by any one of the Prime Minister's three tests: sinking of our own ships; killing of U-boats; or the volume of our own new building; there is no doubt of the success of the anti-submarine measures taken during 1943. It was for this reason that Mr. Churchill, in his Mansion House speech on November 9, was able to deal with the campaign in one sentence only: " We have broken the back of the U-boat war, which at one time had seemed our greatest peril."

An important fact to appreciate is that the mastery of the U-boat was not the result of any greatly improved strategy or tactics, or even the production of any startling new weapons or instruments, though improvements of existing ones obviously contributed to the result. From the outbreak of war the Navy had the means of mastering the U-boat, in particular the asdic for the detection of submerged submarines, as was proved by the losses inflicted on the enemy during the first nine months of hostilities and the latter half of 1941.

What the Navy lacked, from June, 1940, was the means in sufficient quantity, in ships and aircraft, to compete with an increasing number of U-boats, over an increasing area. Moreover, three times, when the anti-U-boat campaign was going well—on the fall of France, on the extension of the war to Russian waters and then in the Pacific, forces had to be diverted elsewhere, with a consequent reduction of escort strength on our main life-line across the Atlantic and increase in our shipping losses.

Our scientists were as successful in providing the answer to such new weapons as the enemy did adopt, as the Navy and the R.A.F. were in countering the enemy's attempts at new tactics. But, when all is said and done, the submarine's main advantage is to operate submerged and if this can be defeated the U-boat is mastered. Any attempt to employ this most vulnerable of all naval craft as a surface ship or anti-aircraft vessel is a mistaken conception, a failure to realise it's great limitations, and is doomed to failure from the start.

A passing tribute is due to the personnel, Mercantile Marine as well as naval, for their devotion to duty and gallantry in facing greater dangers from above, on and under the sea than in any other war ; their contribution was magnificent and no small factor in the success.

The position at the end of the year was that the submarine menace had been mastered as never before, but the battle had not been finally won. U-boat attacks will continue until the end of the war and flare up from time to time in any area in which the enemy calculates that he can obtain a quick, if only temporary, advantage. To keep the whip-hand of them, anti-submarine measures must continue on an ever-increasing scale, with an endeavour to keep a step ahead of the enemy in new weapons and tactics ; if this is done the U-boat cannot again become a serious menace to the Allied war effort.

H. Pursey.

CHAPTER VI.

THE DEVELOPMENT OF LANDING CRAFT.

WHILE landing craft are as old as marine history—the Romans used galleys to run aground on the beaches of Southern England and the Vikings beached their longships when they came harrying the coasts of England and Scotland—the creation of modern landing craft started in the 1914–18 war. Britain was the pioneer.

Among the various landing craft designed for that war there was the famous "River Clyde" specially adapted for landing on the beaches of Gallipoli. Ports were cut in her bows, and closed by watertight doors so that the troops were protected from rifle fire during the approach to the shore, through which they were to disembark when she grounded.

During that war the X lighter was designed for use in the rivers of Mesopotamia, a steel-built craft fitted with a Diesel engine, and a double ramp to enable men, horses and vehicles to pass over the bows.

Then came the first of the modern drawbridge type, actually designed and built for the Royal Navy during the 1914–18 war, but it was not ready for service until after the Armistice had been signed. It was called a Motor Landing Craft (M.L.C.), could carry a ten ton load, and could be hoisted on board a carrier ship. Instead of propellers, which might be fouled and damaged in shallow water, there was a system of jet propulsion, which, however, had the fatal disadvantage of slow speed.

Having made a start on devising craft specially built for the landing of invasion troops, Britain was preparing to advance and develop the original ideas even before the present war started. Neither the Germans nor the Japanese were concentrating on devising new types of landing craft until the lead had been given by Britain. The landing craft of which the Japanese made great use in the invasion of China, and subsequently of the Philippines, Malaya and the East Indies, were wooden oar-propelled sampans carried in parent ships and suitable for unopposed landings. Germany's invasion fleet, collected after the fall of Dunkirk but never used to invade Britain, consisted of Rhine barges and Dutch schootes or canal boats of considerable draught and tonnage. But judged by Anglo-American standards to-day, they would have proved quite unsuitable for an attempted invasion of Britain's shores.

In August, 1939, a month before the outbreak of war, the first modern landing craft, an L.C.A. or Assault landing craft, ran its trials in the River Clyde. It was a minor landing craft designed to be transported in a carrier ship. After the fall of France production was greatly speeded up and new types designed. The first major ocean-going landing craft ran her trials on the Mersey at Liverpool just six months after Dunkirk. To-day there are more than fifty different types of landing craft, large and small, in the Royal Navy. Chief British minor landing craft are the L.C.A. (assault), the L.C.M. (mechanised) and the L.C.S. (support).

The mechanised landing craft is a vessel of rectangular shape with a fairly high freeboard. The square bow is closed by the ramp which in the sea-going position juts up above the hull. It is operated by a hand winch, and can be speedily lowered when the craft reaches the beach. In appearance this ramp is balanced by the wheelhouse, placed right aft across the stern, a protected space just wide enough to house wheel and compass binnacle and engine-room telegraph, with room for the coxswain to sit or stand inside. In order to avoid interference with the compasses, all the steel of which these minor craft are built is demagnetised.

The engine-room is below decks, housing two powerful internal combustion engines driving twin screws. The engineer—known as the driver—sits with the controls in either hand, and orders are conveyed to him by engine-room telegraph or voicepipe. The craft can be well manœuvred despite the ungainly appearance, shallow draught, high freeboard and broad beam, which give only a poor grip on the water. By means of the twin screws these craft can be turned almost in their own length.

Steel doors open over the stern where a kedge or non-dragging anchor is kept ready for instant use. During landing operations, this is dropped on the approach to a beach, and the cable paid out until the bow has run aground and the ramp is lowered. On a rising tide the cable can be further paid out, and the craft driven forward to keep her on the beach. On a falling tide the cable can be hove in to prevent her from stranding. At a moment's notice she can be kedged off into deep water, a powerful winch being fitted for working the cable.

The assault landing craft differs from this type not only by having a greater turn of speed, but also by having a lower ramp which does not project above the freeboard. It is driven by similar engines, but the steering position is forward in a small protected box. Although small it is capable of carrying a surprisingly large number of men accommodated in the fore and aft bays under the armoured deck.

Support landing craft are not, technically speaking, a landing craft at all. They are not designed to be put ashore. Their purpose is to provide cover for the actual landing craft and they are more in line with the appearance of small motor torpedo boats. Each is equipped with smoke apparatus and a smoke-float mortar, with which dense smoke-screens can be laid at speed. For their size, their armament is so formidable that they can not only engage shore targets, giving gun support to the landing troops, but they can also go into action against enemy dive-bombers.

All these craft carry a minimum of crew—coxswain, driver and one seaman. There are also signal officers, generally R.N.V.R. sub-lieutenants who have been specially trained in Combined Operations signals common to the Navy, Army and Air Force. One signals officer is assigned to each of several selected craft in a flotilla. The flotilla itself is under the command of a Flotilla officer.

These minor landing craft were designed to be carried in parent ships—converted fast freighters strengthened and fitted with powerful davits, or vessels built specifically for the job.

After the collapse of France production of these craft went ahead on mass-production lines. All round the coast the boatyards were busy on them. But they were also being made in inland garages, engineering shops and small factories many miles from the sea. Large numbers of marine engines were supplied by America. In the darker days of the war British forces were able to make Commando raids on distant enemy territory such as Norway because of the original foresight in London. There were landing craft available.

But there was a need also for tank and infantry landing craft which could cross the oceans under their own steam, capable of transporting on long sea passages large numbers of men or tanks, lorries and mobile guns.

Several types of tank landing craft with various modifications followed the first L.C.T. trials on the Mersey in November, 1940. The typical L.C.T. is a vessel of about 200 feet in length with a beam of 31 feet and a displacement of 350 gross registered tons. They draw 8 feet forward and 7 feet aft, the keel sloping from bow to stern to meet the slope of a beach. In order to keep down the deadweight it is very lightly armoured, being built of mild steel plates ⅜-inch thick, which will resist bullets but are not proof against shells or bomb splinters.

In the bows of the L.C.T.'s there is a ramp hinged at the base, lowered or raised by wires worked from a hand winch. Some tank landing craft are provided with power-driven winches, but hand winches remain essential in cases of breakdown at critical moments during shellfire and bombing. When closed, the ramp shuts the bows of the vessel and takes the force of the seas. Lowered and resting on the beach it provides a runway for easy disembarkation.

Tanks, guns or lorries occupy two-thirds of the craft. They rest on reinforced iron platforms with corrugated surfaces to prevent the treads or the wheels from slipping. At sea they are lashed in place. Vehicles enter the L.C.T.'s in reverse and are packed close together facing forward —an operation requiring a high degree of training and practice on the part of their drivers. During 1943 great strides were made in speeding up the embarkation and disembarkation of these sea-borne tanks, mobile guns and trucks. Where once it took minutes, parts of the operation could be undertaken in seconds. The final proof of what advances had been made was seen when a large-scale amphibious invasion exercise was carried out in the English Channel by all three Services in September last.

The typical L.C.T. is driven by two 500 h.p. twin Diesel engines placed well aft. Propellers are 3 feet 4 inches in diameter and rotate in the same direction. Normally twin-screws revolve in opposite directions so that they do not affect steering, the torque of one cancelling out the torque of the other. But in navigation in shallow waters there is always danger of propeller damage. By having both engines and assemblies identical, the quantities of spares which must be carried is considerably reduced. This is important. Unnecessary loads must be avoided so that the amount of vital stores and vehicles carried need not be restricted. The fitting of identical engines and propellers not only simplifies manufacture, but also makes for more efficient and speedier training of engine-room crews and for speedier engine repairs. Spare propellers may have to be fitted at night while afloat or under fire, therefore without lights. Points like these have to be carefully studied when new landing craft designs are under consideration. Like the minor landing craft, the L.C.T. employs a kedge anchor from the stern. An officer is detailed to watch the rise and fall of the tide when the vessel is on the beach so that she can be kept in position and, at the same time, prevented from stranding herself.

Even the layman, with the greatest stretch of imagination, could not term the L.C.T. a good sea-boat, although many have crossed the Atlantic. With her broad beam, shallow draught and considerable freeboard, she too has little grip on the water and, difficult to manœuvre at all times, is easily affected by wind and sea. It is not easy to start her turning, and, once started, it is difficult to stop her. These are the inevitable disadvantages which have to be accepted. Nevertheless, it was proved during the Channel amphibious exercise last September that young R.N.V.R. sub-lieutenants could handle even the biggest types of invasion craft efficiently. Each L.C.T. carries a crew of two officers (either Royal Marines or R.N.V.R.) and 10 men. Living conditions are hard, although, in recent months, ways have been found of improving the appalling conditions in some of the earlier types. At sea officers and men are continually exposed to the weather. Their quarters are cramped. There is no privacy and little comfort. A dozen men are sleeping, eating, washing within a few feet of each other. The soldiers, commanded by their own lieutenant or second-lieutenant, sleep inside their vehicles, crowding into the already cramped seamen's quarters for washing and cooking.

All the ratings are " hostilities only " and are drafted into the landing craft much as they might be drafted to destroyers, corvettes, trawlers, frigates or sloops. This " service within the Service " is not one for which they can volunteer. Yet many with whom I have sailed express pride at being part of the youngest branch of the main Naval service. They have their own *esprit de corps*, have been making their own traditions, and have found satisfaction in realising that without them there could be no invasion victory. Landing-craft crews have been drawn from all walks of life. They are shop assistants, clerks, garage hands, labourers, farm workers, lawyers, journalists, City men, newsboys and students. But they have all been drafted into landing craft with two major qualifications. They are all young. And they are all tough.

All officers have earned their commissions the hard way. They have all seen sea service as ratings. They found themselves in command of their own ships at an age when the peacetime naval officer was small fry of even a small ship. They know their ships are the ugly ducklings of the Navy, difficult to handle and crazy in a seaway, uncomfortable, unsheltered, and, compared with other ships even an old trawler would represent pampered luxury. But they love being " invasioneers." Young though they are every man on board has already been trained. Signals officers have been trained in radio as well as visual signalling. The drivers are capable of undertaking all running repairs, and before they even set foot on their actual craft they have perfected their drill on dry land, practicing in a sectional craft—a full-scale model in half sections fore and aft, erected at their training bases. The seamen break away from one main tradition of the sea service. That age-old tradition is " avoid the beach at all costs." These youngsters have to run ashore at the precise spot intended for landing vehicles and men and yet they must avoid becoming immobilised during the operation.

In addition to the landing-craft crews and signal officers there are beach parties—naval commandos—whose special job is to go ashore with the first waves of assault troops, and organise the unloading of vehicles and stores, as well as controlling the movement of craft to and from the beach. Other naval officers who go ashore when a landing is made are the Forward Observation Officers who establish themselves at strategic points to " spot " for the guns of the Fleet supporting the landing. These officers, who are equipped with radio sets, locate enemy objectives, strong-points and gun-positions, report the fall of shot, and so direct the fire of the big ships.

It has been reported that so efficient were the landing-craft crews at Dieppe, so drilled, cool and expert, that every one of the tank-carrying craft put its tanks ashore successfully. There are countless cases where big landing craft have been saved by expert ingenuity on the part of the " drivers," skilled in making quick repairs under adverse conditions. One

L.C.T., 72 lives, and tanks worth £250,000 were saved by a Petty Officer's ingenuity during invasion operations in the Mediterranean. The port engine failed and the L.C.T. was taken in tow. In bad weather the tow parted. Half an hour later the starboard engine also failed. The crew worked in vain. There seemed nothing they could do to get under way again. They drifted helplessly, an easy target for enemy planes or E-boats. Then the petty officer had an idea. He converted a 50-centime piece into a washer with the aid of some leather and insulating tape, and so repaired a severed feed pipe. The starboard engine started up again and the L.C.T. reached the invasion beach only slightly behind schedule.

One L.C.T. flotilla commanded by a former French naval officer now holding a commission in the Royal Navy, and officered by men who were all ratings two years ago—a journalist, a chartered accountant, four schoolmasters, a solicitor, a builder, an insurance manager, a bank clerk, and a trawler skipper among them—covered the 1,700 mile voyage from England to Gibraltar in eight and a half days, during which they had five U-boat alarms. One craft had a brush with a U-boat but got away with only superficial damage. They ran into heavy weather and one craft broke in two. The rest of the flotilla took the two halves in tow and brought them into Gibraltar. Another craft had an engine breakdown. The young commanding officer—Lieut. R.N.V.R.—got the crew to turn out their hammocks, improvised a sail out of them, and reached Gibraltar along with the convoy.

The flotilla was first put to work as lighters and ferry craft in harbours full of wrecks and obstructions. They were the first ships wearing the White Ensign to enter Bizerta. They had time for only two practice runs before attempting the actual landing operations during the Sicilian invasion. After leaving Sicily they had only a fortnight to refit before the Italian campaign. And day and night the crews, often up to their waists in water, carried out repairs. When the invasion started they took not only tanks and equipment, but also 70 soldiers each, the tiny galleys working 24 hours a day to feed them. In return the soldiers manned the guns and helped with the ships' work. For nearly a week the landing-craft flotillas went into the Salerno beaches three times a day under shell and machine-gun fire as well as continuous air attack. They remained operating as ferries and lighters for a month afterwards. From August to November, 1943, they worked ceaselessly with no leave except an occasional two hour leg-stretch on the beaches. In six months in the Mediterranean that one flotilla steamed nearly 2,000 hours, most of that sea-time being in bad weather. That is the record of a typical tank landing craft flotilla.

But the tank and infantry landing craft of the Royal Navy do more than carry and discharge men, stores, guns, 40 ton tanks, lorries and general necessities, to the spots the big ships cannot reach. All sorts of emergency tasks crop up in total war. In the crossing of the Volturno, when the Army was in difficulties in trying to get tanks across, four L.C.T.'s took on the job. They closed the northern shore at first light, and as the leading craft ran in a German battery opened up on her. But she landed her tanks and withdrew safely. The others followed her lead, and the force withdrew to the southern bank to reload. Enemy gunfire followed them across and they were shelled continuously. Yet they loaded more tanks and crossed the river again despite fresh attacks from fighter bombers.

The vital necessity for landing craft of all sizes, designs, and in great numbers was seen in the invasion of Sicily, where, in the first 48 hours of the operation, landing craft put 7,000 vehicles, 300 tanks and 700 guns ashore with the 80,000 men of the Seventh and Eighth Armies who made the assault. The scale of landing craft operations for the main assault on the fortress of Europe was never doubted. It was known months before preparations for invasion of Europe even approached completion, that every 100,000 fighting men put ashore would require 80,000 tons of stores for the initial landing, and another 32,000 tons in the first month. At least 200,000 men behind the front line are needed to maintain supply and move those fighting men. That means a total of 300,000 men to feed, clothe, house and transport. Those 300,000 consume 700 tons of food a day—240 lorry loads. They use 1,340 tons of water a day. They require one vehicle—tank, gun, tractor, lorry, watercart, etc., for every five men—60,000 vehicles consuming 1,100 tons of petrol a day. Until strong bridgeheads are established and ports occupied and put into good working order, every man, every piece of equipment from cooking stoves to bulldozers, sten guns to 40-ton tanks, must be put ashore from landing craft. And that is why, for the first five years of war, landing craft of fifty different types were a priority order throughout Britain, apart altogether from Canada and the United States.

One of America's greatest contributions to the Allied war effort has been the big-scale production of " ducks "—the last word in amphibious warfare. They can be driven overland or through the water. In appearance they look like big metal-sided motor lorries, shaped like a pontoon with a double set of wheels at the rear and another set in front. The propeller is tucked in between the rear wheels. Even though, in the water, the duck has to remain in low gear it can still, according to reports, bowl along at a steady eight knots, carrying loads of about four tons. They sail in V-shaped convoys much like a brood of ducklings across a lake. They were used successfully at four landings in Sicily, for landings on the toe of Italy, at Salerno, at Termoli, and then were next used for landings on the Anzio bridgehead. Such operations left little doubt of the value of these giant ducks for helping in the storming of Hitler's Europe. Tens of thousands of ducks have come off the assembly line in the United States during the past year.

Early in 1944 it was announced in Washington that the U.S. naval programme called for 80,000 landing craft of all types, of which about 25,000 had by then been completed. The total cost of the major figure was between £1,250,000,000 and £1,500,000,000. The craft still to be built during 1944 were intended for the offensive against Japan. Ducks —or, as they are known in America, alligator craft—able to traverse land and water, were to be a large part of that programme. During 1944 one out of every four dollars spent on ships was earmarked in Washington for landing craft. Meanwhile, landing craft of all types were still being built in large numbers in Britain—pioneer Nation in having specially designed craft for landing on enemy shores.

A. J. McWhinnie.

CHAPTER VII.

THE EXPANSION OF SEA POWER IN THE PRESENT WAR.

I.

The reaffirmation and expansion which Sea Power has experienced during the present conflict can be fully appreciated only against the background of the profound crisis through which it has been passing ever since the end of the last war. That struggle had, indeed, ended by confirming once more the strategic forms developed in the classical period of naval strategy. But the many novel and perturbing features which it had produced—the loosening of the grip of the blockade, the consequent strategic irrelevance of so much activity in the North Sea, including the single large scale fleet action that had occurred, combined with the shock which the challenge of submarine warfare had given to the traditional conception of the " Control of the Sea "—left a widespread feeling of uneasiness and a suspicion that beneath the apparent continuity of forms Sea Power might be on its way to profound transformations of which nobody could foresee the outcome. Above all, the surprise of the submarine, although it had eventually been mastered, had served as a most vivid reminder that the apparent consolidation of technological development since the 1880's and 90's had been but a temporary phenomenon and might at any time give way to wholly novel and revolutionary developments.

These revolutionary changes were feared, not so much on the side of the submarine, which throughout the period tended rather to be regarded with unjustified complacency, as on that of the aircraft—a wholly new weapon, which, unlike the submarine, had not really come to a serious test of its possibilities. The sweeping claims of its adherents to sink any man-of-war " at sight " were not conducive to a clear and calm examination of the issue, leading by their very exaggerations to an undue reaction in the opposite direction. Nevertheless they left a pronounced undercurrent of uneasiness and tended to strengthen the wide-spread criticism of the traditional methods of naval strategy developed by various schools from the indeterminate experience of the World War.

Such criticism questioned both the continued efficacy of the methods by which the stronger Sea Power had so far been able to impose its control over its weaker opponent, and its ability to protect its lines of communication behind such a covering screen. The greatly loosened system of blockade employed by the Allies, it was alleged, had been made possible both in the North Sea and in the Atlantic only by the exceptionally favourable geographical configuration which might not recur elsewhere, or might break down altogether under the increased impact of air power. Even if the Fleet were not blasted off the surface of the sea, it might still be forced to open its grip simply by making its bases untenable (Nigel Tangye). And even if the battle fleet's grip itself remained unbroken, it might be successfully circumvented by a renewal of submarine warfare combined with attacks by powerful surface raiders, as well as long-range bombers—all the more so since the convoy system, readopted against the submarine, was believed to play directly into the hands of the two other forms of attack (Castex). If the system of " Command " did not break down altogether under this double menace, its offensive stranglehold on landpower would certainly be weakened.

These " technical " perplexities of naval strategy were still further accentuated by the unprecedented extension of its commitments and the simultaneous emasculation of forces to deal with them. During the old wars of the sailing ship era these problems had been singularly simplified by the fact that all the great sea powers had the home bases of their strength within a narrow area in Western Europe. Thus the strongest among them, Great Britain, was generally able to concentrate her main defensive and offensive effort into the single task of establishing her " command " within a few limited areas—the Channel, the Bay of Biscay and the Western Mediterranean. Such concentration became more and more problematical when with the expansion of Western civilisation over the globe new centres of sea power sprang up in far distant zones in the United States and Japan. For the time being, however, the distractive effect of this development was neutralised by the political arrangements which during the First World War brought both of them to the side of the Allies, with the result that this conflict was once again fought out along the traditional lines: control of the enemy's main concentrations within two narrow coastal seas, the North Sea and the Adriatic, ensuring a world-wide control of the sea. With the end of that conflict, the attempt was made to solve the problem by a peaceable division of spheres of naval preponderance between the three leading sea powers. The break-down of that arrangement from 1931 onwards left the two Anglo-Saxon sea powers not only with unprecedented world-wide commitments, but with forces that had been reduced below any reasonable margin.

These real or presumed perplexities of Sea Power were eagerly seized upon by a number of naval writers, particularly in Italy and Germany, who sought to base upon them a new strategy of the " inferior sea Power " : the Power that could not hope, herself, to acquire " control of the sea " and, therefore, should deliberately renounce the struggle for that unattainable aim in order to strike all the more surely at the chinks in her stronger opponent's armour. Such had been the basic idea of the French " *Jeune Ecole,*" but it had been swamped under the indiscriminate wave of enthusiasm for the " command " that followed the publication of Mahan's great works. Now the realisation of the fatal diversion and dissipation of German naval strategy during the First World War, resulting from the blind adoption of these ideas, gave it a new and greatly increased impulse. The peculiar conditions under which it arose made this critical re-examination of the nature of " Sea Power " and of " Command " on the part of the representatives of the Minor or Continental sea Powers anything but objective or complete. Frequently, it merely served to replace an old error by a new one. But, with all its defects, it did give them an incomparably clearer grasp of the issue and of their own possibilities than ever before, and, through the deliberate challenge contained in it, added its part to the general crisis of Sea Power.

II.

These accumulated difficulties and incertitudes hung like a heavy cloud over Sea Power when it re-entered the arena in September, 1939. To the burden of world-wide commitments and inadequate forces was added the further burden that nothing was *quite* certain, neither instruments nor methods; and the absence of any reserves left—unlike the first World War—no margin for undue surprises, errors or experiments. Happily, not all the dreaded potentialities materialised, not all of them to the full extent feared, and not all at once. But their shadow hung over the decisions of those in command as perhaps never before in the history of Sea Power; and without it neither the picture of its crisis in this its greatest struggle nor that of its eventual triumph would be complete.

Yet the situation that faced the Allies when the war began appeared superficially by no means unfavourable. The conflict remained restricted in the main to a single theatre, the North Sea and Atlantic—the Mediterranean being watched only by a token force—and the overwhelming superiority which the Allies enjoyed over Germany in heavy ships could to some extent compensate for their weakness in other classes, in particular all types of "escort vessels." * Above all, the Home Fleet promptly reimposed its control without being blasted out of the water by the *Luftwaffe* or—except for the sad loss of the Royal Oak owing to the delay in completing the anti-submarine defences of Scapa Flow—suffering any major mishap by U-boat or air attack throughout these years. When in the summer of the following year the successive German occupation of most of the Atlantic coast of Europe threatened to break its grip upon the continent, it was able to maintain it in new and more elastic forms with the help of the new air instrument. From the outset, however, it was apparent that the real menace of the German attack would be directed not so much against the Allied system of cover as against their lines of communication behind it. Starting slowly and none too successfully during the first nine months, the onslaught rose steeply after the fall of France until the Battle of the Atlantic became the greatest as well as the most vital single issue of the conflict. The success of the Allies in overcoming that onslaught was due in part to the fact that the most dangerous menace, the powerful surface raider, fell far short of what had been hoped, or feared, from it; and, after scoring a few brief successes in the autumn of 1940 and the spring of 1941, when the exhaustion of the Royal Navy's resources forced it to reduce convoy protection at times to mere token escorts, was signally eliminated with the Bismarck. In part it was due to the fact that, contrary to pre-war expectations (Castex), the form of defence that proved effective against the submarine proved equally so against attack from the air, which for over a year after the fall of France had assumed in the Atlantic proportions by no means negligible. The struggle reached its climax when, after the entry of the United States into the war, the attack first passed over to the other side of the Atlantic, and then from the two terminal areas began to cover the entire crossing; concentrating upon the central stretch, which hitherto in naval warfare (including the last war) had been relatively immune, but now, because of the difficulty of patrolling in the air, became the chief danger zone. With the development of very long-distance aircraft, the acquisition of new bases, and the placing into service for the first time of really adequate escort forces, including in particular a large number of the new escort carriers, mastery was finally obtained in the summer of 1943.

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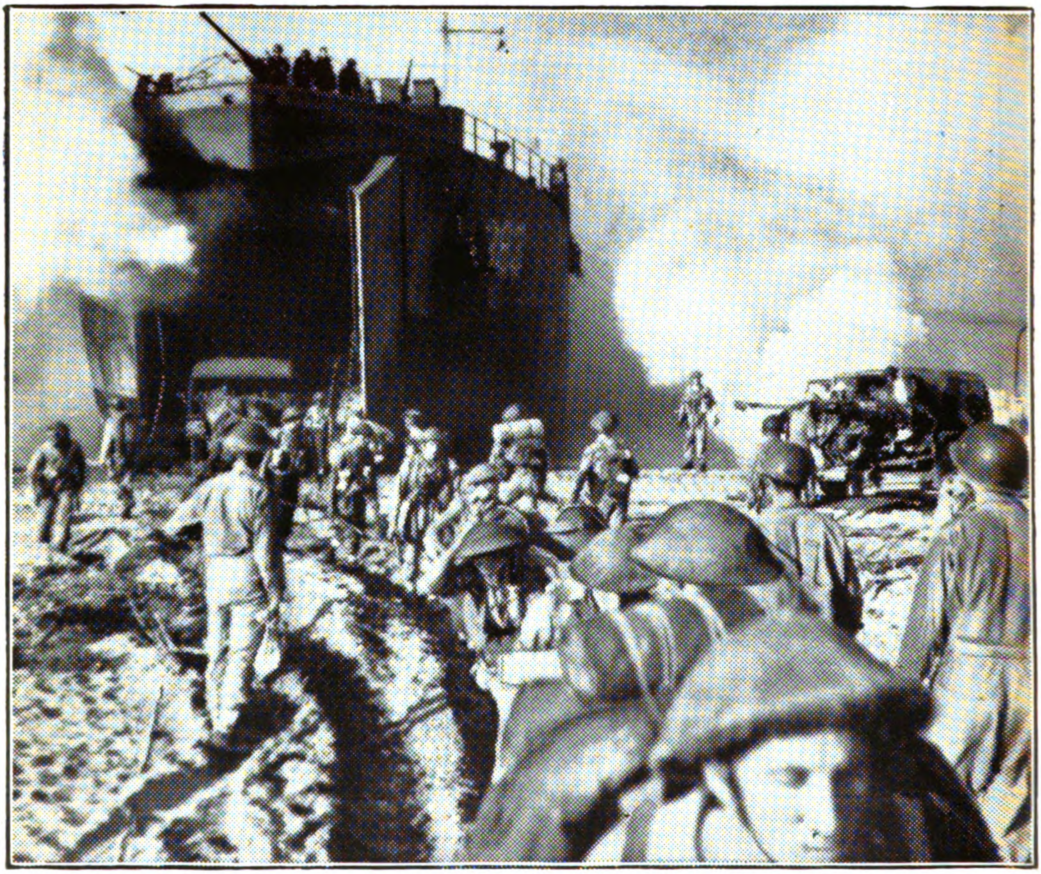
* Thus during the first two weeks of the war the aircraft carriers were employed on anti-submarine hunting in areas dangerously open to U-boat and air attack, resulting in the loss of the "Courageous." Later on, from October, 1939 to January, 1940, five of them were employed on trade protection and the search for enemy raiders throughout the Indian and Atlantic Ocean.

Artillery disembarking in Italy from an L.S.T.

(Official photograph. Crown copyright reserved.)



Vehicles landing at Salerno from an L.S.T.

(Official photograph. Crown copyright reserved.)

In contrast, in the Mediterranean the fall of France left Italy in a position of such superiority in the surface forces, air power and bases that the continuous use of that seaway for ordinary purposes became impossible, and Sea Power had perforce to concentrate upon the task of preventing the Axis from dominating that vital lane. While Sea Power maintained the Allied ground and air forces in North Africa and the Near East, it kept Malta in action by throwing in supplies from time to time, though at an ever increasing cost; thus enabling the air and submarine forces operating from there to force the Axis supply ships to detour within reach of Allied Sea and Air forces operating from Egypt—a co-operation of all services which was most signally apparent, and most successful in the critical weeks preceding the battle of El Alamein, which with the landing in North Africa decided the Mediterranean struggle.

However successful in this objective, British naval strategy in the Mediterranean was unable to break down the persistent Italian refusal to jeopardise the containing effect of their fleet by exposing it to the chances of battle; and therefore, tied down as it was both in the Atlantic and the Mediterranean, was unable to free adequate forces against the third and most powerful foe in the Far East. The destruction of the Prince of Wales and Repulse coming almost simultaneously upon the incapacitation of the U.S. Pacific Fleet at Pearl Harbour, marked the ebb of Allied strategy. The holding of the Central Pacific line in the East and of the Ceylon-Madagascar line in the West was the turning of the tide, enabling the Allies to contain Japan within her area of preponderance and to organise their own global strategy upon the isolation of their two opponents and the concentration of the emphasis upon the western group.

III.

Thus one of the outstanding revelations of the present conflict has been the degree to which the stature of Sea Power has been enhanced through the expansion of the war to global dimensions. Even in the incomparably more restricted conditions of former struggles the influence of Sea Power was seldom negligible as in 1870–71; it was generally vital, and often decisive. Now, with the extension of the war to the four corners of the earth and the development of warfare to its present tremendous scale in men and equipment, control of the great, all-surrounding medium of mass movement and mass transportation has become, together with the necessary equipment to exploit it, the absolutely indispensable prerequisite of any world-wide combination. In global war, merchant shipping is the ultimate key to strategy.

Indeed, Sea Power has only now truly come into its own. Just as the fusion of the world into a single strategic chess board has for the first time brought out the full significance of the all-surrounding and interpenetrating unity of the sea against the isolated and divided continents—the fact that in the words of the old saying, so often misquoted and derided, " The sea is all one "; so it is only on such a global scale that Sea Power can reap the full benefit of its peculiar assets—its ability to isolate its opponents and support its allies; to impose disproportionate and often disastrous effort upon its enemies by the mere threat of its ubiquitous striking power; and in its turn concentrate overwhelmingly superior forces against the isolated fractions of its opponents.

Yet, even these two factors—the decisive importance of controlling the great medium of mass transportation in global warfare and the projection of the traditional advantages of Sea Power on to a world-wide scale, do not yet suffice to explain the extraordinary increase in the significance of Sea Power in the present conflict. As the global extension of the field of combat has moved the sea, or at least certain decisive areas of it, from the periphery into the very centre of action (global strategy); Sea Power has been promoted from its traditional role of "keeping the ring" to a function of direct, decisive intervention into the most crucial strategic issues themselves. The outstanding example of this phenomenon has been the struggle against Japan, in which the oceanic nature of the main theatre of war has made the decisive campaign itself, and not merely its preparation and supply, a matter of Sea Power —and on which even the re-opening of a concerted drive on land, through the reconquest of Burma, is decisively dependent upon control of the sea.

Even more significant perhaps, though less grandiose in scale, is the other outstanding instance of the direct intervention of Sea Power into the major strategy of the present conflict: in the Mediterranean—particularly in view of the obvious comparison with former conflicts. As every student of naval history knows the role of the Mediterranean in the evolution of Sea Power has been second only to that of the Narrow Seas. For more than two centuries it was the springboard from which the Sea Power of Britain could make its mighty lever felt in the affairs of the continent. And yet this intervention, highly effective as it was, was mainly indirect and peripheral: the bombardment—or threat of bombardment—of coastal towns and ports, the interruption of sea-borne supplies, at the utmost the imposition upon the enemy of a wasting war of attrition in an eccentric sector of his domain (Spanish Peninsula, Crimea). For all these struggles were confined to the continent of Europe itself, and were decided in the valleys of the Rhine and the Danube, difficult for Sea Power to affect even indirectly, or in the Catalonian or the North Italian Plain. Once only in the course of all these conflicts was a determined effort made to project the struggle beyond the confines of the European continent, across the Inland Sea into the great strategic crossway of the Old World, where the North African strip meets the Near East—by the genius of the great Corsican.

The renewal of that attempt by the Axis in the present war with incomparably stronger resources and incomparably greater chances of success, strikingly illustrated both the importance of that decisive water line in global strategy and the immensely increased significance of its control by Sea Power. Thus Sea Power far from finding itself reduced, as some have suggested, to the subordinate, if indispensable, role of a mere carrying agency, a "transport industry," has in the present struggle risen to an unprecedentedly direct, decisive intervention in the crucial strategic issues themselves. It is not only the handle of the new trident of power, it is in the fullest sense one of its very prongs.

It has become so, however, through the resolute refusal to consider the suggestion, put forward by several interested parties both before and during the present conflict, that its field of action should be restricted to the High Seas, leaving the coastal zones—the famous "*Vorfeldzonen*" of German Naval Theory—to the reign of the aircraft, possibly assisted by the motor torpedo boat and motor gunboat. It should hardly be necessary to explain that such a "division of spheres," however attractive on paper, would in practice prove not merely crippling to Sea Power, but utterly unworkable. For a Sea Power hovering on the High Seas, but incapable of approaching any hostile coast within range of dive bombers, would be no Sea Power at all.

The true and ultimate test of the capacity of Sea Power to discharge the traditional functions and to assume the new and vastly increased obligations that have fallen to it within the new pattern of global strategy, has been precisely its capacity to maintain itself without catastrophic losses—under adequate aerial protection—not only within narrow, land-locked waters, but in prolonged operations off the enemy's coast in the teeth of powerful air concentrations. In the amphibious operation off Salerno, the outstanding instance to date, this problem was met by a highly complex arrangement, under which land-based fighter planes operating from aerodromes in Sicily gave general cover to the naval forces engaged, including the battleships Rodney and Nelson and the two large carriers Illustrious and Formidable, while aircraft from the latter in their turn protected the five smaller escort-carriers farther inshore, thus enabling the latter to release their own fighters for patrol work over the beachheads themselves.

Such elaborate machinery, however, inevitably implies a very marked restriction of the freedom with which Sea Power could formerly transfer its attack to practically any sector of the enemy's coastline—not only because of the time and effort needed to mount it, but, above all, because of the limitations imposed by the need of keeping within range of land-based fighter cover. It will be of the utmost importance to Sea Power, and with it to global strategy, to determine whether the greatly increased number of carriers together with the steadily improving performance of fighters will in the end enable it to achieve reasonable protection with the latter craft alone, thus releasing it from the most serious of its present limitations.

IV.

No less remarkable than this expansion in the scope and significance of Sea Power has been the transformation of structure and methods which has accompanied and made it possible. It is a matter of common knowledge to what an extraordinary degree Sea Power in the course of these last years has come to enlist the support of the aircraft, not only as a protective screen against its own kind (as at Salerno),* but equally so as a most successful antidote to the submarine and a powerful increase of its own striking force against any type of enemy vessel.

This wholesale integration of the air factor into practically every aspect of naval warfare—operations and tactical methods, minelaying, blockade, and escort duty—has profoundly modified the structure and methods of Sea Power and raised a host of difficulties of organisation and co-ordination which are now in process of being ironed out. But most of these modifications have after all only affected the externals of Sea Power. Only two of them have touched its innermost core, its fundamental structure—aerial reconnaissance and, to a lesser degree, the restricting influence of the land-based bomber.

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* The importance of fighter cover (carrier-borne or land-based) in naval operations should not, however, obscure the tremendous advantages made in anti-aircraft armament since Pearl Harbour. In the case of some up-to-date battleships, the increase in volume and accuracy of their anti-aircraft fire has been such that they have not only shot down enemy planes by the score, but have even been able to provide protection to their own escorting carriers; thus releasing the latter to a considerable extent from their defensive duties and enabling them to devote themselves to a large extent to offensive action. Nor do the lighter vessels appear to have been any less successful. Particularly interesting in this respect is the fact that in the course of the last year even the submarine, formerly the type of craft most in dread of the airplane, has preferred to remain on the surface and fight out a gunnery duel in which, despite its poor qualities as a platform, it appears by no means always to have come off second best. According to the most recent statements, however, this attempt seems to have come to an end.

Aerial reconnaissance can be described without exaggeration as perhaps the most revolutionary innovation Sea Power has experienced in the entire course of its more than 2,000 years of recorded history. For all other changes have effected naval warfare only indirectly, by altering or affecting the tactical or operational properties of the ship; whereas aerial reconnaissance has struck directly at the central issue which over so many centuries has perplexed and preoccupied the masters of naval strategy: the difficulty of tracing an enemy once he has gained the open sea. As long as organised naval warfare has been in existence, that incertitude has been the fundamental problem of naval warfare, the factor which above everything else has distinguished it from war on land and which explains the widely different strategic forms which it has adopted. The whole of naval history from the sixteenth century onwards is nothing else than the attempt to cope with that perplexity, growing ever greater, in proportion as the extension of the theatres of combat and the increase of sea-borne traffic increased the necessity of establishing control over one's opponent. The system of close blockade, inaugurated in the Seven Years' War by Hawke and brought to its supreme pitch of efficiency at the time of Britain's struggle against the Revolution and Napoleon, was the first great answer to that problem. When the ever-increasing range and striking power of the mine, the torpedo-boat, and finally the submarine made its application no longer possible, it was replaced by the looser form of control exercised by the Grand Fleet from Scapa Flow. And now with the breakdown of this looser form of control through the German occupation of Norway and the greater part of the Atlantic coastline of Continental Europe, aerial reconnaissance has stepped on to restore the grip of Sea Power over its opponent more securely than ever before.

Not that aerial reconnaissance has proved itself a panacea, an instrument without fail under all conditions. It is as yet only in the beginning of its development, and will always remain subject to the general limitations of aircraft. But, even with all these temporary or permanent qualifications, and even though its full consequences have not yet been developed, the change it has introduced into the conduct of naval operations is so already profound that it must be considered as a qualitative change rather than a mere quantitative expansion of former methods.* Thanks to this instrument the naval commander to-day for the first time enjoys something of the same grip on the strategic situation which his luckier colleague on land has enjoyed all along. Only through aerial reconnaissance has the shift from the control of relatively narrow coastal water to that of such vast areas as the entire North Atlantic or of the Pacific and Indian theatres of war become possible.

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* In fairness to aerial reconnaissance one should measure it not against an unattainable standard of 100 per cent. perfection, but against the previous state of affairs. Only then will the radical character of the advance become apparent. Thus its failure to detect the sortie of the Scharnhorst and Gneisenau appears in a different light if we consider that the escape of single heavy raiders has been a problem with which naval strategy in the past has never been able to cope effectively. Likewise, the outstanding significance of the detection of the Bismarck and of her re-discovery after contact had been lost, stands out all the more impressively. And similarly with other instances—Admiral Somerville's undetected approach in the bombardment of Genoa, as well as various instances in the struggle in the Pacific.

The detailed analysis of the transformations wrought by air reconnaissance in the fabric of naval strategy must wait until the pertinent facts are no longer shrouded in secrecy. One aspect, however, is so obvious and has emerged so clearly even from the fog of official communiques that it deserves at least a brief mention: namely, the extraordinary degree to which the loosening up of naval strategy through aerial reconnaissance has favoured the general tendency of modern naval warfare towards increasing flexibility of its tactical, operational and strategic forms. Just as in the tactical sphere the massed battle and destroyer squadrons of the last war have been broken up into the present elastic mixed groupings of battleships, carriers and lighter craft, so the loosening of the control system has tended to replace the former clear-cut distinction between " cover " and " escort " forces with an incomparably more fluid system, first clearly emerging in the chase of the Bismarck, under which—as was shown by the crushing concentration assembled on that occasion out of capital units spread all over the Atlantic—the same forces may be called upon to serve alternatively in one function or the other.

However characteristic this tendency towards greater elasticity of forms and forces must appear, it would be an error one-sidedly to overstress it. It has not led to the abolition of all concentrations, neither on the Atlantic—where the Home Fleet has tended to preserve a powerful nucleus—nor in the Mediterranean, and least of all in the Pacific—where the inconspicuous yet unmistakable influence exercised by the bulk of the Japanese Battle Fleet behind the screen of peripheral clashes may well lead in turn to even stronger concentrations and thus to the large pitched battles, the total absence of which has thus far been one of the most remarkable features of the present struggle.

This silent influence of the opposing main forces, combined with the restrictive power of the land-based bomber has produced that other remarkable phenomenon of the present conflict—the division of the Pacific into two separate spheres and the concentration of the battle for its control into a grim struggle for a few vital island footholds where the two peripheries meet. The impossibility of facing the enemy's main strength deep within his own sphere of naval and above all aerial preponderance, far from one's own bases; the necessity, therefore, of moving forward step by step, neutralising the enemy's island airfields by even stronger concentrations of one's own air power brought up to within striking distance—these factors have here produced a wholly novel kind of amphibious warfare, waged as much with land and air as with naval forces, contrasting most strangely with the broad sweeping movements we have been witnessing in the Atlantic and Mediterranean, and yet constituting only another aspect of the evolution of modern Sea Power into an intricate system of all forces revolving more closely than ever before around its bases.

Both the heavy bomber and the long-distance reconnaissance plane, neither of which can be operated from carriers, have tended to emphasise this dependence of Sea Power upon its footholds still further until we find it—most characteristically in the Northern Atlantic—resembling a huge net in which the temporary or permanent bases form the knots between which ships and aircraft weave the elastic strands of Sea Power.

V.

If Sea Power has thus to-day expanded into a highly complex structure in which the contribution of the air component is already every whit as important as that of the surface and sub-surface vessel, the question inevitably arises: Can this process go still further? Can the land-based plane perhaps eliminate the surface ship (and with it the carrier-borne plane) and carry on the work of Sea Power alone?

The attempt to answer this question makes it necessary to go back once more to the fundamental characteristics of naval warfare. For the acquisition and exercise of the control of the sea—as so many recent critics tend to forget—is not a series of unconnected actions, but a vast systematic drive, a long, laborious process, in which the individual moves require more continuous, steady effort than perhaps any other form of warfare. An army or air force unit, is normally in action either by day or by night, rarely through both and never over a prolonged period. A man-of-war on one operation or "merely on escort duty," on the other hand, finds itself "on duty" twenty-four hours a day for weeks at a stretch, night and day, in every kind of weather, good, bad, indifferent—or hurricane.

Such exacting and continuous service in the teeth of all the forces of nature and of every conceivable form of enemy action, requires not only extreme endurance, dependability under all and every condition, capacity to carry through all the manifold tasks that may present themselves, but above all, the best possible balance of offensive and defensive strength. This is above all true of that class of surface vessels upon which, in the last resort, the entire system of Sea Power (and of global strategy) rests: the capital ship. The capital ship's role as the cornerstone of naval strategy is founded—even more than upon its capacity to master any opposition—on the ability to stand up under the strongest blows that can be brought to bear against it. Only so long as the capital ship is able to give reasonable assurance of such ability is planned naval strategy—and with it control of the sea—possible.

That is the reason why the carrier, for all its invaluable work both in task forces and above all on escort duty, is unlikely ever to replace the capital ship as the "backbone" of naval strategy. Not only is its offensive power "freakish," depending, unlike the shell, upon instruments subject to incalculable influences; above all, its wholly disproportionate incapacity to withstand attack of any kind disqualifies it for that fundamental role. Yet, with all these deficiencies, the carrier remains a sea-going vessel, sharing the general qualities of such craft and thus imparting some of them, notably its endurance, and power to follow prolonged operations "on the spot" to the aircraft which it carries. It is only when we contrast the surface vessel with the *land-based* plane that the difference in their properties and hence their respective roles in the fabric of Sea Power become plainly apparent. The vastly superior mobility and range of the aircraft make it, as we have seen, a unique instrument of reconnaissance, both tactical and above all strategic, as well as an extremely powerful weapon of offence against any type of craft—in many respects superior to the gun, although somewhat less reliable. On the other hand, its limited endurance, inefficiency at night and greater dependence upon the weather, handicap it in the discharge of those protective duties which form by far the major proportion of all the work of Sea Power. Moreover it is not the equal of the surface ship in certain essential tasks (rescues) and is wholly unable to perform others (mine-sweeping).

For all these reasons it is still the surface ship that has to provide what one might call the " basic framework " of Sea Power: to ensure the continuity of protection throughout the individual operation as well as to maintain the general system of cover upon which the ultimate security of the whole rests. Nor does it seem that the aircraft will ever be in a position to replace it in this function, even if the attack should be confined to the air alone. In fact, if the aircraft at any time should prove permanently unable to support the heavily protected man-of-war against enemy air assaults, it would seem *a fortiori* unlikely that it would continue to be able to shepherd the incomparably less well-armed, unprotected, as well as slower merchantman across the sea. In that case we should find ourselves in the curious position that whereas aircraft would be able to deny the use of the sea to the enemy they would be unable to assure it to their own side. The result would be a world in which the sea would indeed have become a no man's land, and the isolated continents would find themselves reduced to exchanging blows with each other by superbombers at 3–6,000 miles range. Whether such a state of affairs—if it ever should come about—could be considered advantageous from anyone's point of view is a matter on which opinions are likely to differ. One thing, however, seems certain: that this country at any rate would find it singularly difficult to continue to exist under it.

HERBERT ROSINSKI.

CHAPTER VIII.

THE FLEET AIR ARM.

The year 1943 was one of momentous development and expansion for the Fleet Air Arm. Profiting by experience gained not only in success but also in adversity, the Royal Navy decided to "go into the air" with all the force at its command, and the Admiralty adopted a progressive policy of ordering modern aircraft in large numbers, and made arrangements for training an ever-increasing number of men to fly and service them.

CARRIERS.

No new Fleet carriers emerged during the year, and none of the existing Fleet carriers was lost, but a number of new escort carriers appeared; some were merchant-ships converted in American yards, others in British, and now increasing numbers are being laid down and built as escort carriers. The length of their flight-decks is about 470 feet, planked athwartships, with lifts fore and aft. They have no funnels, but discharge their smoke from vents on either side of the flight-deck, and have no superstructure except the island. They have proved their value not only in escorting convoys, but in amphibious operations at the North African landings and at Salerno. This tactical use of a number of small carriers co-operating with landing forces suggests the shape of things to come, both in the invasion of Europe and in the campaigns in South-East Asia and the Pacific, where shore bases are likely to be few.

AIRCRAFT.

With the new carriers came new aircraft. There is a popular fallacy that carrier-borne aircraft must necessarily be second-class aeroplanes. There is no reason why they should be, and, in fact, they are nothing of the kind, their only differences from land aircraft being in the hooking, the special wireless sets and the folding wings. Each of these costs a small sum in weight, but the total is something under 300 lb.

One of the principal milestones of 1943 was the introduction and acceptance of the folding-wing Seafire III, a naval version of the Spitfire provided with a hook. Although derivative, these are naval aircraft in their own right, and it is now the policy of the Admiralty to take the best machines available and adapt them for naval purposes.

The year also saw the introduction of the Fairey Barracuda, a new type of torpedo-bomber, which has at last overcome its somewhat prolonged teething troubles. Details of its performance and armament are still secret, but it may be said that it has already given satisfactory service. More information is available concerning another torpedo-bomber which has recently gone to the squadrons—the Grumman Avenger. The Admiralty originally called it the Tarpon, because, when arrangements were made for it to be supplied to the Royal Navy, there was an escort carrier named the Avenger—now, alas, no more. This was also in accordance with the Admiralty's policy of naming torpedo-bombers after ravening fish (Shark, Albacore, Barracuda), and naval fighters after birds (Roc, Osprey, Skua, Fulmar). Thus the Grumman fighter, known in the

United States Navy as the Wildcat, became the Martlet in the Fleet Air Arm.

Once an aircraft has received a name there are many technical difficulties in changing it. With the two nations combining their efforts under Supreme Commands in the various theatres of war, however, their Lordships felt it advisable to adopt identical names for the same types of aircraft, and by a recent order the Tarpon now bears the name of Avenger and the Martlet that of Wildcat; the original names of the other new American-built aircraft in service with the Royal Navy are to be preserved.

The Avenger is a single-engined, mid-wing, all-metal monoplane with retractable landing gear and folding wings. It has a crew of three. Its Wright Cyclone 1,000 h.p. engine gives it a speed of over 250 m.p.h., and it has a range of over 1,000 miles. It is armed with machine guns and carries a torpedo (enclosed in the fuselage) or a ton bomb-load.

The United States has also provided the Royal Navy with two new fighters—the Chance-Vought Corsair and the Grumman Hellcat—the outcome of the American policy of designing aircraft specially for naval use from the start. Both have folding wings and are designed to operate from carriers.

The Corsair is a single-seat, all-metal, inverted gull low-wing monoplane, with a Pratt and Whitney Twin Wasp 2,000 h.p. engine. It is in the 350 m.p.h. class, with a range of over 1,500 miles and a service ceiling of over 35,000 feet. It has been described as " a honey of a ship." The Hellcat's speed is similar. Like the Corsair, it is a low-winged monoplane, with improved armour and a new flexible-type petrol tank. It proved itself in September, 1943, in a raid on Marcus Island, its first time in action with the U.S. Navy, and both these fighters are the answer to the prayers of American pilots for an aircraft which can tackle the Japanese Zero on any terms.

Squadrons of these American-built torpedo-bombers and fighters are already afloat in British carriers. These are not isolated squadrons. There is a ready flow of these aircraft coming into service with the Royal Navy.

When a newly-completed aircraft is ready to leave the American factory it is flown by a naval ferry pilot to the delivery unit at Floyd Bennett airfield on Long Island, where it undergoes a thirty-hour check by the United States Navy, and the Government-furnished equipment is fitted. The aircraft allotted to the Admiralty are then flown to Roosevelt Field, Long Island (the home of early American civil aviation, now a U.S. naval air station), where they are taken over by officers of the Royal Navy. Wrens are responsible for checking the aircraft and their equipment, and then, in the long hangar, mechanics of the United States Navy carry out the modifications necessary to enable the aircraft to operate from British carriers and naval air stations. A number of American sub-contractors is employed to make the brackets and mountings for fitting the British equipment, and these contractors turn out a flow of material to keep pace with the delivery of the new aircraft. Wrens " marry " these parts to form a complete modification and also pack the spares when the aircraft are ready to leave.

All this is a vast improvement on the old system whereby the American-built aircraft were despatched to the United Kingdom for modification, since they can now be flown from Roosevelt Field direct to a carrier, sent to British squadrons under training in the United States, or shipped to their destination in merchantmen, either crated or carefully serviced in rubberised tape as deck stowage. Thus, at Roosevelt Field, is forged the last link in that chain of co-operative industry which begins with the men and women of the aircraft factories and ends with the American naval mechanics working under British naval officers, who, in their turn, come under the flying regulations of the American commandant of the station. It is a literal joining of hands across the sea, a pooling of material, output, and human energy for a common end.

With the exception of the redoubtable Walrus and a few Swordfish squadrons retained for duty in escort carriers and other special carriers, the biplane has now disappeared from the Royal Navy. The Albacore is obsolescent and, among the fighters, the Fulmar and the Sea-Hurricane are withdrawing into the background and are being superseded by the new types.

The modern fast naval fighter is now able to compete with the land-based fighter on almost equal terms, and it is being recognised that the Fleet Air Arm needs a higher proportion of class fighters than it has had hitherto. The success of night-bombing attacks has been proved, and with that success has come the recognition of the need of the carrier-borne night-fighter for defence. The Royal Navy has always believed in dive-bombing—the now obsolete Skua performed valuable service in the early stages of the war, particularly during the Norwegian campaign, and although the Fleet Air Arm has been limited by its inability to secure suitable aircraft since the Skua, it is likely that this difficulty will be surmounted in the future. American naval pilots have specialised in dive-bombing since 1922 and have accounted for most of the Japanese ships that have been sunk from the air. The peculiar value of the dive-bomber is the individual nature and accuracy of its attack, which, if made in sufficient strength and pressed home with sufficient determination, is sure to succeed. Nevertheless, like the shell, the dive-bomber scores an above-water hit, and only when the attack is co-ordinated with torpedo aircraft to open up the target below the waterline is it likely to sink an armoured warship.

PROBLEMS OF DESIGN.

The 45,000-ton carriers now being built by the United States suggest the introduction of larger ship-borne aircraft, with multiple engines. The bombing of Tokyo by United States Mitchells from the Hornet was the first example of this trend. It is still debatable whether it is better for the Fleet Air Arm to have the largest available single-engine aircraft with the highest possible performance and with a weight of between 17,000 and 20,000 lb., or a twin-engine aircraft with the extra weight of the second engine and the double petrol load, increasing the weight to 25,000 or 30,000 lb., to say nothing of the extra maintenance ratings to be carried in the ship, and the increased width (at least 10 feet) required by each aircraft in the hangar.

One view is that, in spite of the apparent drawbacks, the twin-engined aircraft may be necessary to give adequate fighter protection for invasion forces, involving flights of long endurance; a contrary view, held by the chief designer of a famous aircraft factory, is that, in the fighter category, the twin-engined aircraft cannot hope to compete with a single-engined type, assuming equal standards in design; this view is based on the conviction that fighters do not necessarily become better as they grow bigger. Nevertheless, as regards bombers and torpedo-carriers, he considers it possible that a twin-engined layout may well prove to be the best solution to the problem of carrying such a load internally without ruining the form of the body.

Upon one subject, however, there is now no disagreement among experts: that the Navy must be provided with its own aircraft capable of operating from ships, and that these aircraft must be in no way inferior in performance to the equivalent shore-based types. Highly specialised aircraft have become a necessity for the Fleet Air Arm, and in order to fulfil operational requirements more types may have to be provided for naval use. At all events the past policy of using multiple-purpose machines must be discontinued. It is now recognised that it is a mistake to attempt to design one aircraft capable of dive-bombing, high altitude precision bombing, torpedo work, conversion to very long range requirements, in addition to general reconnaissance. Every effort should be concentrated on building a first-class basic aeroplane. Experience has proved that, once this has been accomplished, the aircraft can be adapted to carry out a number of duties. Had the Spitfire been originally designed for all the roles it has since been called upon to perform it is certain that it would have been a complete failure. In the same way, fighter aircraft which have been built to fulfil the requirements of long range, heavy armament installation, minimum take-off and landing speeds, and fully arranged to satisfy every requirement for more efficient handling in a carrier, are likely to be shot out of the sky by enemy shore-based fighters.

Owing to space limitations, methods of operation and handling, and operating conditions, the design of naval aircraft has become a very difficult problem. In the fighters, higher performance requirements have led to increased wing-loading, which has resulted in higher take-off and landing-on speeds. This presents problems which must be overcome not by making any reduction in performance but rather by more intensive training in the use of such aircraft and by changes in operational technique. Furthermore, range, armament, equipment and special gear for ship operation must be studied very closely in their relation to their effect on performance.

It appears probable, therefore, that the naval fighter of the future will be small, and in shape will substantially follow the orthodox single-engine formula, except that it may be fitted with counter-rotating airscrews. Laminar flow wings may be employed and the body also would be very smooth. It should provide an improved view for the pilot and should be fitted with tail-type arrester gear and a longer-stroke under-carriage to facilitate landing-on. Such an aircraft would climb at over a mile a minute and its speed at rated height would be over 500 m.p.h.

At the same time in order that the fullest advantage may be taken of the movement in the design of carrier-borne aircraft, the naval architect must play his part by doing everything possible to improve the design of the carriers themselves, particularly in landing-on facilities and attesting devices.

It must never be forgotten that, just as naval aircraft have special functions to perform, so the pilots and observers of the Royal Navy have peculiar duties and problems. They must navigate for long distances over the sea, homing to a single point whose position upon the ocean is inconstant. They must learn a special form of air discipline : the manœuvre of leaving the deck and forming up over the ship, the return to the carrier, splitting up, entering the landing circuit, and finally making their approach to the flight-deck, their movements directed by the Deck-Landing Control Officer, in whom their trust must be absolute. The new deck-landing technique that has been evolved is proving an essential element in the success of naval flying. Previously the aircraft were struck down by lifts to the hangars as they landed on ; now they are parked forward of the barrier in the eyes of the ship and can be taken on at a greatly increased speed. The operational advantage of this is that the whole area forward of the barrier can be used as extra storage for aircraft, so that the ship is not restricted to those which can be carried in the hangars.

ACHIEVEMENTS OF NAVAL AIRCRAFT.

By the end of 1942 the Fleet Air Arm had many achievements to its credit and had learned many lessons. Reconnaissance aircraft had shown their value on countless occasions, notably in the chase of the Bismarck and at the Battle of Matapan. The Ajax's Seafox spotted for the cruisers' gunfire at the Battle of the River Plate. Other naval aircraft spotted for shore bombardments including those at Genoa, Tripoli, Bardia and Dante in Italian Somaliland. In the second Battle of Narvik the Warspite's Swordfish passed back vital information about the enemy destroyers, gave warning of torpedo tracks, took photographs, bombed a destroyer and sank a submarine.

The Swordfish and Albacores proved their value with torpedoes at Tobruk, Oran, Taranto, in the chase of the Bismarck, and in the Battle of Matapan. These and other successful actions, and those which were unsuccessful, such as the attack on the Tirpitz by twelve Albacores from the Victorious on March 9, 1942, showed that Nelson's saying " Only numbers can annihilate " is as true of aircraft as of ships. The proportion of torpedo hits that can reasonably be expected from a striking force increases with the number of aircraft engaged, and in each of these engagements, had the number of the striking force been doubled, the result might have been destruction instead of damage to the Bismarck and the Vittorio Veneto, and the Tirpitz might have been sent to the bottom of the North Sea instead of escaping unscathed.

In addition to these more spectacular actions, much good work was done by the T.B.R. aircraft from shore bases—as lodger units of the R.A.F.—in the Western Desert, Malta and Great Britain, destroying enemy shipping and laying mines. The great Malta convoys from 1940 to 1942 had proved that a naval force could fight its way through a narrow sea, if protected by a sufficient number of ship-borne fighters. Above all, 1942 showed the decisive part which naval aircraft can play in amphibious operations beyond the support of land-based aircraft. The invasion of Madagascar had been the first experiment in this new form of tactics, the landings in North Africa the second ; both proved that carriers provide the mobility to bring aircraft into positions impossible for them to reach by any other means.

These operations pointed the way for the best method of attacking the mainland of Italy. Indeed, the planning of the Salerno landings in

September, 1943, was based on the fact that carrier-borne aircraft could be used, since the distance involved precluded the employment of land-based fighter squadrons in the initial stages (except for brief visits from distant bases), unlike the landings in Sicily, where the R.A.F. was able to give fighter cover from Malta, 60 miles away.

Salerno was the small carriers' engagement, and five of them—the Unicorn, Battler, Attacker, Hunter and Striker—were employed, escorted by three cruisers and ten destroyers, the force being commanded by Rear-Admiral Sir Philip Vian. The combined force passed northward through the Straits of Messina on the night of September 8. It was a memorable passage, for it was the first time since the outbreak of war that a British force of any strength had sailed through the Straits. H.M.S. Scylla and Charybdis made a bowing acquaintance with their famous forebears. In Messina and San Giovanni the churches were flood-lit; the townspeople could be seen dancing in the squares and fireworks flared into the sky in celebration of the armistice, news of which had been published earlier that evening.

The force arrived at Salerno at daylight on September 9, operating under the orders of the Commander of the Western Task Force, Vice-Admiral H. K. Hewitt, U.S.N. The first sortie was flown off at 6 a.m. These patrols continued at intervals throughout the day until 7.30 p.m. protection to the carriers being given by Wildcats from the Illustrious and Formidable, which formed part of a strong covering force commanded by Vice-Admiral Sir Algernon Willis, with Rear-Admiral C. Moody as Rear-Admiral, Aircraft Carriers.

One of the primary objectives of the Fifth Army was the occupation of the large airfield of Monte Corvino, a short distance south-east of Salerno, and the escort carriers' part was to provide fighter cover for the landings and the beachheads until the R.A.F. and the U.S. Air Force could operate from this base. The troops ashore met with a stiff resistance, however, and even after the Germans had been forced to withdraw from the airfield they kept it under shellfire. The patrols from the carriers were maintained throughout the 10th and 11th. The fighter pilots were disappointed to have few combats, but the Fleet Air Arm more than justified its presence by neutralising the Luftwaffe, which declined battle and confined itself to reconnaissance by day and flare-dropping by night, with an occasional tip-and-run raid by three or four Messerschmitts or Focke Wulf 190 fighters, the bombers putting in no appearance over the beaches by day.

One pilot from H.M.S. Hunter was on dawn patrol over the beaches on the second day, ran short of petrol and was compelled to bale out. He landed in the sea and was picked up by an American minesweeper, together with two German pilots who had also baled out about the same time. Owing to a misunderstanding the British pilot was mistaken for a German and was passed on board an American warship as a prisoner-of-war. When he had established his identity, instead of being interrogated he was treated to a " breakfast of four eggs with lashings of bacon " in the captain's cabin.

Another pilot had trouble with his arrester-hook and landed at Monte Corvino. The airfield was still under fire from a mobile German 88 mm. gun and was also being covered by two or three Tiger tanks. The officer piloted his Seafire to a safe position and then took cover. That night a report came through that the Germans were advancing and he found himself with several others making for the beaches in a lorry. Having been challenged by a password of which he did not know the key, he found himself temporarily arrested and later was given shelter in a tank landing craft in which he had a couple of hours' sleep ; when the L.C.T. had to collect more stores he got a lift in a " duck " back to Monte Corvino, where he found his Seafire none the worse and was able to fly it via Salerno and Malta to Bizerta, taking with him some urgent Press despatches and photographs, and navigating without maps.

On the morning of the 12th, Monte Corvino was still under enemy shellfire, but a landing strip had been established at Pæstum and it was decided to land Seafires from the escort carriers to operate until the arrival of the R.A.F. There was keen competition from the pilots " to have a spot of shore-life " and the only solution was to draw lots. Having flown off these aircraft, Admiral Vian's force withdrew from the area. The landing strip proved to be " a place of dust, American soldiers and canned rations," and the conditions for operating fighters were far from ideal. After an aircraft had taken off it was necessary for the next to wait for five minutes to allow the pall of dust to subside. At night the Americans showed their hospitality by sharing their mosquito-nets, blankets (spread under bramble bushes) and their " foxholes." Although the enemy was only a mile and a half away the British pilots spent a peaceful night. A nearby farmhouse was used as a mess—the first naval wardroom in Occupied Europe.

The following day it was decided to move to another landing strip, about 12 miles away. Here flying and servicing conditions were better, but the strip was situated in the no-man's land between the Fifth Army's twenty-five pounders on the seaward side and the equivalent German batteries two miles inland. As one officer reported, " The constant duel between these artillery positions made the air hideous with noise, sleep impossible, and constituted a menace to life and limb." Patrols were carried out next day, and in the afternoon, the R.A.F. having arrived, the shore-based Seafires withdrew.

During the four days' operations the carriers experienced certain difficulties in operating their aircraft, which nevertheless carried out something like seven hundred sorties. The area was free from swell, but there was almost a flat calm and never enough wind strength to make deck-landing simple. The haze and poor visibility added to the problem of homing aircraft. There were, however, surprisingly few casualties to personnel. A larger proportion of casualties must be expected when operating high-performance aircraft from small carriers, since the pilot is landing at a high speed on an extremely restricted aerodrome, so that the margin for error is very small. Deck-landing on a small carrier is a finer art than on a large one, especially without the advantage of sufficient wind over the deck.

The most amazing escape was that of a Seafire pilot, who, in landing on H.M.S. Hunter, floated over the arrester wires, crashed through the barrier, hit a damaged aircraft parked on the forward end of the flight-deck, and finished up on the fo'c'sle head. He sustained slight cuts and abrasions and was put to bed for a day or two.

In spite of bad flying conditions, however, the aircraft made even more sorties than they had been expected to, and the decision to use the escort carriers was abundantly justified. They did all, and more than all, that had been expected of them. Their presence had enabled fighters of the highest performance to operate in areas which they would otherwise have been unable to reach, and they had given the landings complete immunity from air attack.

After the operation Admiral Hewitt expressed his thanks to the Fleet Air Arm for the vital security which the fighters had provided during the most critical part of the landings. More valuable experience had been gained of the manner in which the Royal Navy can carry out its traditional duty of securing the safety of amphibious operations.

CONVOY PROTECTION.

Besides the fighter cover and tactical reconnaissance provided by the naval aircraft during the early days of landings on enemy territory, carriers also provided anti-submarine patrols round all focal positions off the beaches and on the supply routes, for, as in the past, naval warfare is still a matter of sea communications, whether protected by surface craft or from the air. It may now be expected that the Fleet Air Arm will play a definite and essential part in any operation which entails landing in territory beyond the range of shore-based aircraft, whether it be on the mainland, as in Italy, or on island bases, as in the Azores, when H.M.S. Fencer, operating aircraft from her deck and later from airfields ashore, secured the landing grounds before the R.A.F. aircraft could take possession and start patrols ; submarine patrols were also carried out in defence of the convoy and its covering force, and kept the submarines down.

In this duty the Fleet Air Arm was by that time perfectly instructed, by the experience gained not only on convoys to Russia and Malta, but in the Atlantic. The escort carriers may be said to have entered the Battle of the Atlantic in the spring of 1943, the Archer and the Biter being the first to go into operation in defence of the convoys. It has been well said that it was the escort carrier which " rammed home the last nails in the U-boats' coffin."

The value of the small carrier for escort duties had first been demonstrated by H.M.S. Audacity, originally a German merchantship of 5,500 tons which had been intercepted and captured by H.M.S. Dunedin. When the U-boat and Focke-Wulf menace was at its worst, she was converted as an escort carrier. She was given a flight-deck of 420 feet in length and 60 feet in beam, but had no hangar. Her six Martlets (as they were then called) had to be parked aft, so that the foremost had only 300 feet of runway over the deck. Her captain was Commander D. W. Mackendrick, R.N., an experienced pilot.

The Audacity and her Martlets made history during her brief but glorious career from September to November, 1941. The Martlets destroyed five Focke Wulf Kuriers and damaged three, and contributed to the sinking of three submarines and the scuttling of a fourth. They had come to the aid of the Gibraltar convoys when the danger was very great and the Martlet pilots, in proving that fighter aircraft could operate effectively from small carriers, turned the tide of the U-boat campaign.

The Audacity was followed by a succession of small carriers, the majority provided under Lease-Lend. The first began to appear in the summer of 1942. Their delivery from the United States had been delayed and when they were handed over, the demand upon their services was so great that they had to be diverted to more urgent operations, such as the

Russian convoys and the North African landings. But in 1943, in spite of military successes, the sinkings of merchantmen by U-boats was still causing grave concern, and, as in 1916, those in high places realised that if Great Britain failed to sustain the flow of food and munitions of war, victories on land would be in vain.

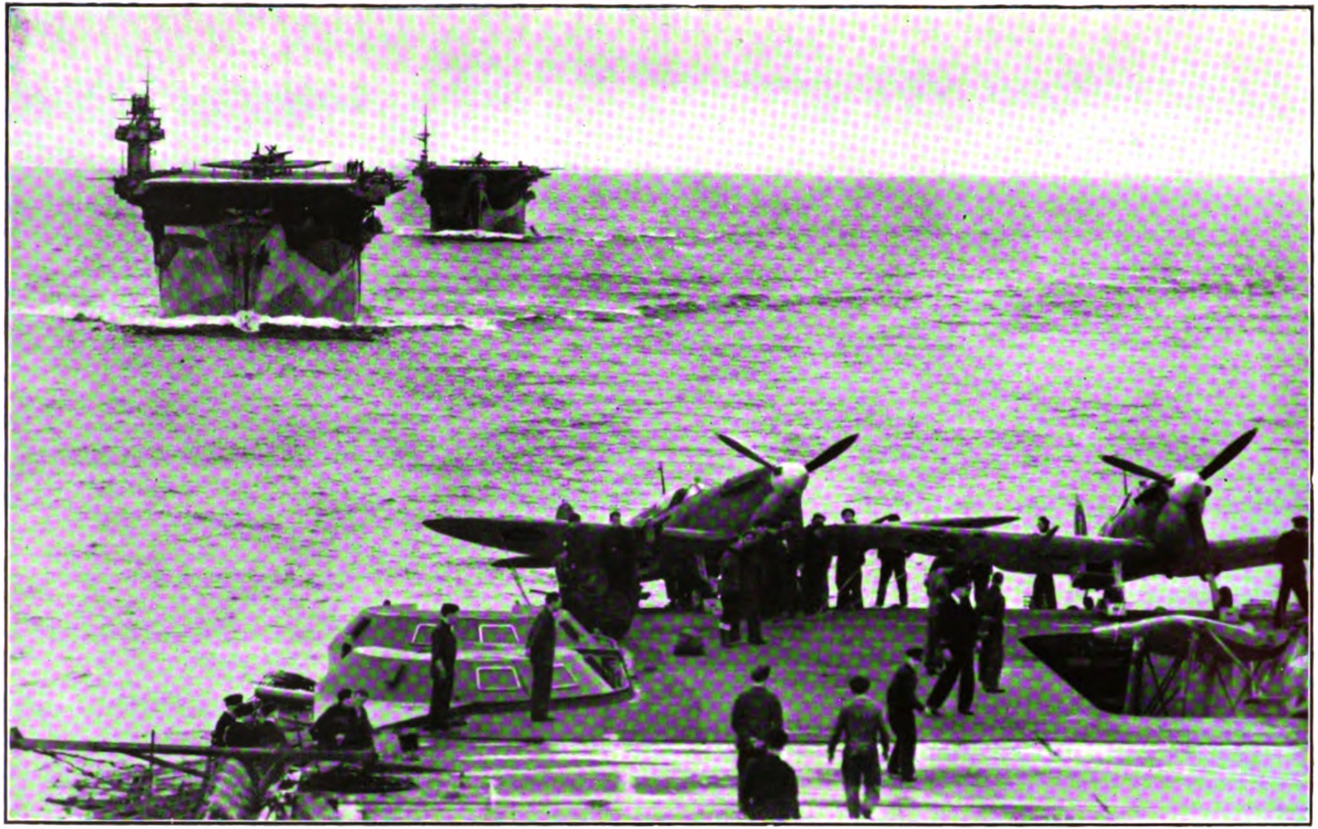
Most of the losses in the Atlantic occurred between the longitude of 30° and 40° west, a gap of about 600 miles, which could not be covered by the British Sunderlands or the North American Catalinas operating from either side of the Atlantic. In this gap, therefore, U-boats had the greatest chance of immunity and it was there the packs concentrated. The range of the shore-based aircraft was increased by the production of Very Long Range (V.L.R.) aircraft, mainly American-built Liberators, and surface escorts were increased by the addition of sloops and frigates. A third method of dealing with the situation was to throw into the battle the escort carrier, and to make the gap as dangerous to U-boats as it had previously been secure. The enemy was using long-range aircraft both for spotting the convoys and for leading the U-boats and aircraft to the attack. These tactics could be countered by the carrier-borne aircraft better than by any other means: a patrolling Swordfish, escorted by a fighter, would watch for the submarine and drop its depth-charges; if the U-boat showed fight the carrier would fly off some fighters and these could also deal with enemy long-range aircraft. In this way, naval aircraft have dispersed and driven off a pack of twenty U-boats in a running fight which lasted two days, with only two ships lost out of a convoy of sixty-seven.

The escort carriers flying the White Ensign were kept mostly with convoys and the carriers of the United States Navy were used with success as striking forces. This method of defence combined with attack is the secret of the success achieved. At the same time, full credit must be given to the work of the escorts, which often finished off the work of destruction which the aircraft had begun, to the improved gunfire of the merchant ships, and to the aircrews of the Sunderlands, Liberators and Fortresses of Coastal Command, working under the operational control of the Admiralty.

PERSONNEL.

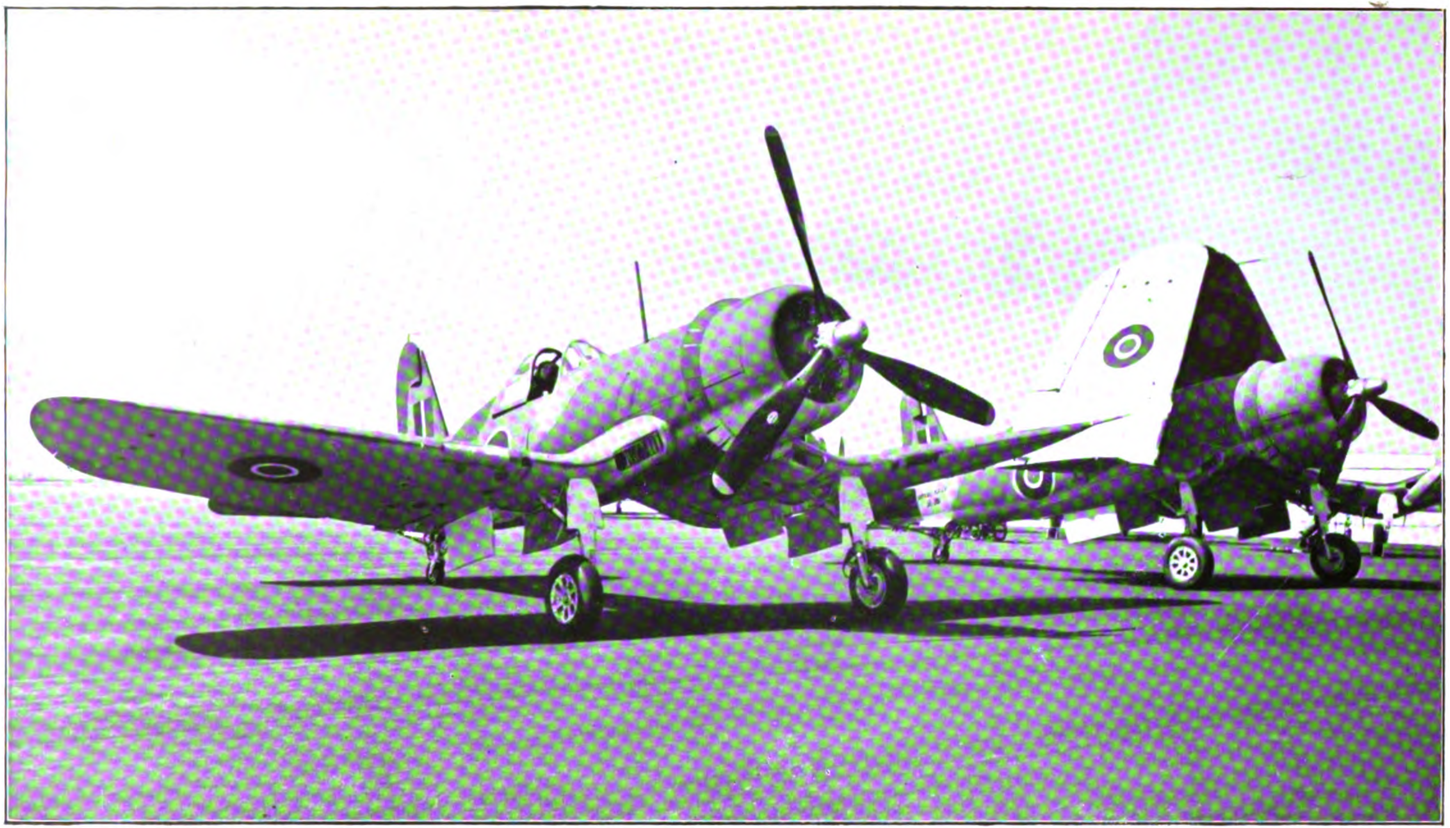
This expansion of carriers and aircraft for the Royal Navy has meant an increasing expansion of personnel to be trained for duties with the Fleet Air Arm. The increase in aircrews is being provided mainly by the Royal Naval Volunteer Reserve, from which 95 per cent. of the pilots and observers are drawn. Many of them come from the Dominions, particularly from New Zealand, some from the navies of the Netherlands, the Fighting French and Norway.

Some of these officers are trained in Great Britain, some in Canada, and there is an Observer School in Trinidad, but at least a third of the pilots, after a disciplinary course in H.M.S. St. Vincent, receive the whole of their flying training in the United States, under the scheme inaugurated by Rear-Admiral John Towers, U.S.N., one of the pioneers of American aviation. The training of these pilots is supervised by a Fleet Air Arm Section in the British Admiralty Delegation at Washington, which works in the closest co-operation with the officers of the United States Bureau of Aeronautics. The mutual confidence between the officers of the two services leads to a complete interchange of ideas, not only on training, but



Escort Carriers at sea. H.M.S. Biter and Avenger following astern of H.M.S. Victorious.

(Official photograph. Crown copyright reserved.)



British naval aircraft at a training air station in the United States.

also on deployment of material, tactical thought and technical matters of every kind.

Flying training in the United Kingdom has often been described, but the training given by the United States Navy is less familiar in this country. The British naval pilots selected arrive, as Acting Leading Airmen, at the large United States naval air station of Grosse Ile, near Detroit, where, alongside American cadets, they receive their preliminary flying training from officer instructors of the United States Navy.

Like the pilots who are sent to Canada, they have to make their adjustments. Most of them have never been abroad before and at first the American way of life is strange to them. They do not forget, however, that they are guests in a foreign country, and so ambassadors, however humble, of their own. They are on their best behaviour, accept the American form of discipline, which is strict, and slightly different from their own ; they are punctilious about saluting and conform to the regulations of the station without demur. They find that their American instructors are as eager to teach them as they are to learn. The working hours are long, but they are keen, and the days are full of interest.

Their quarters are a good deal more comfortable than those in H.M.S. St. Vincent and they soon learn to appreciate American food. Each course of British students is divided into two wings, with its own wing leaders. The first week is spent on "indoctrination," with films to show different aspects of the flying training. Thereafter each wing spends half the day on the airfield and the other half in ground school, with lectures on the theory of flight, engines, aircraft recognition, navigation, and physical training. Much of the instruction is by means of films. After twelve hours in the air the student is allowed to fly solo for three hours a day. During the course he puts in about 90 hours flying in the N 2 S Boeing Steaman biplane.

At Grosse Ile, as at each United States naval air station where British pilots are trained, there is a Senior British Naval Officer (S.B.N.O.) from the Fleet Air Arm, who acts as a liaison officer with the American authorities and also assists in the instruction. The British students wear white cap-bands to signify that they are officer candidates ; in winter they wear blue "square rig," in summer khaki drill, with khaki shirts and black neckties ; while in the United States they are borne on the books of H.M.S. Saker, the British naval establishment in New York. The Admiralty is responsible for their pay, laundry, boot repairs and haircuts. The Navy Department pays all other charges. It has been computed that it costs the United States $27,000 to train a naval pilot.

A certain number of students are "eliminated" at Grosse Ile, but those who survive the tests after some four months pass on to the great naval air training centre at Pensacola in southern Florida—a complete change of climate and scenery from the north, with flying conditions almost as perfect as they can be. It is a beautiful station, with fine brick buildings, and gardens laid out with flower beds and shady trees. When off duty they have the clear water of the Gulf of Mexico in which to swim and at night there is a vast air-conditioned auditorium for their entertainment.

The Centre has seven outlying fields, all made since the war and named after famous aviators. After a week's indoctrination at Pensacola, the pilot moves to Saufley Field for a conversion course from biplanes to monoplanes, then goes on to formation flying for a month, and to Whiting

Field for instrument flying and radio. This completes his intermediate training, and he returns to Main Side to procure his uniform as a Midshipman (A) R.N.V.R. Those who have attained the age of twenty are commissioned as Sub-Lieutenants (A).

He then goes to Corry Field, nearby, for his advanced training, which may last two months. Towards the end of this period the students are selected as fighter (V.F.), torpedo (V.T.B.) or scout (dive)-bomber (V.S.B.) pilots. Within the requirements of the Royal Navy regard is paid to the personal preferences of the students. Before leaving the station they go to Pensacola to receive their wings, which are presented by the Commandant of the Centre at the designation ceremony. By a courteous American gesture the pilots of the Royal Navy lead the parade, followed by those of the Royal Air Force; then come the American naval officer graduates (who have been seconded from the Fleet for air training) and the cadet graduates, who are ensigns and now take the oath as commissioned officers. On leaving Corry Field the fighter pilots go to the naval air station at Jacksonville for pre-operational training, the torpedo-bomber pilots to Fort Lauderdale and the dive-bomber pilots to Vero Beach

When they have completed these courses their training with the United States Navy is at an end, and they go to a naval air station at Lewiston, in Maine, where the Navy Department has granted facilities to the Admiralty. Here a British squadron under a R.N. officer gives all the British students who have finished their Towers Scheme training a conversion course to British flying tactics and practice.

From Lewiston the fighter and dive-bomber pilots go to Brunswick, also in Maine, to form working-up squadrons, under officers who have been sent out from the United Kingdom. The torpedo-bomber pilots go to the United States naval air station at Squantum, near Boston.

At these stations they find a number of observers and telegraphist-aircraft-gunners who have been sent out from England, and, with British maintenance ratings, a complete squadron is formed and flies to a carrier when it has completed working up. The first squadron to pass through these courses are now embarked in carriers with their Corsairs, Hellcats and Avengers. They have been well trained and the British squadron commanders who take them over speak highly of their efficiency. This is perhaps the best possible testimony to the value of the Towers Scheme. In fact one of the few criticisms that can be made against the American training is that it is carried out in weather usually so favourable for flying that when the pilots come to operate in the less ideal conditions of the Atlantic or the North Sea they find themselves at a disadvantage.

Another point is that in the United States they are completely out of touch with the Service in which they have been commissioned, and this is the more unfortunate because the Admiralty rightly insists that the Fleet Air Arm is an integral part of the Royal Navy and that officers of the " A " Branch are naval officers who specialise in flying. This attitude, admittedly, is easier to adopt in peacetime than in time of war, because only those Air Branch officers who come from the Lower Deck have had any experience of life in H.M. ships, and after their preliminary training in H.M.S. St. Vincent they have little or no opportunity to go afloat. The pilots trained elsewhere have the benefit of a course at Greenwich, valuable but too short, and, if the demand upon personnel would permit, it seems that nothing but good could come from extending the pilots' training by a month's instructional course in a battleship or carrier of the

Home Fleet for the single purpose of learning the custom and usage of the Service. These are lessons, essential lessons, which a naval officer can learn only at sea, and it is well that he should learn them before he embarks with his squadron in a carrier.

ANGLO-AMERICAN COLLABORATION.

On the other hand, those pilots who have had their training entirely in the United States have much on the credit side. During their twelve months' course they have come to respect their American instructors and their association with the cadets and ensigns of the United States Navy has sown the seed of international service friendships. These seeds, and others like them, will bear good fruit when these young "fliers," as the Americans call them, come to operate from British and American carriers sailing in company.

Such co-operation has already taken place, not only in the Atlantic and in the North Sea, but in the Pacific. In the latter part of the year, when the United States Navy was short of carriers, the Admiralty sent H.M.S. Victorious to form part of an American task force. She was the broadest ship to ever pass through the Panama Canal. She spent nearly six months in the Pacific and such was the American courtesy and desire to co-operate that her commanding officer, Captain L. D. Mackintosh, R.N., was given his full seniority and was placed in command of a group which included a number of American warships. The operations entailed the ships being continuously at sea for twenty-eight days, in which they steamed over 12,000 miles. The Victorious once crossed the Equator three times in a single day while operating her aircraft. During the flying operations the Victorious operated a squadron of American fighters and the United States carrier in company operated a squadron of British T.B.R. aircraft with complete harmony and success. On one occasion the Victorious ran out of fresh potatoes and the Americans flew over 800 lbs. of dehydrated potatoes in an Avenger, marked in large letters "Spud Express," with a steward to help cook them, a friendly gesture which was much appreciated. "Everywhere I found the American officers most co-operative, and we made tremendous friendships ashore and afloat," said Captain Mackintosh, "I have never worked in such harmony as I have with the American ships."

Before the American admiral left the Fleet to take up a new appointment he paid a visit to the Victorious and addressed the ship's company. "In spite of the fact that the time the two carriers have spent in company has been relatively brief," he said, "the co-operation and collaboration between the two Commands has been so whole-hearted and intense that we sincerely believe that we have built the foundation of understanding and team-work which all our Allied ships, engaged in this war, may well emulate. The friendships alone which have been established between our respective personnel in all ranks will remain a cherished memory long after the last torpedo has been launched and the last bomb has been dropped in this war; it is on such friendships that the future security and peace of the world will depend. May the Divine Providence lead, guard and protect your ship. God bless and spare all of you so that we may continue to fight shoulder to shoulder in this sacred cause of establishing permanent peace on earth; and, once this glorious task has been accomplished, to march together in the victory parade under the Union Jack and the Stars and Stripes."

The sending of H.M.S. Victorious to the Pacific, besides being a gesture of co-operation with the United States Navy, shows that the Admiralty is looking well ahead in aviation to the time when more ships can be spared to intensify the war in the Pacific, which in its final stages is likely to be largely a war of naval aircraft. For that time the Fleet Air Arm is preparing. When it comes the Royal Navy will not be found wanting, either in carriers, in aircraft or in men. Thanks to the American shipyards and aircraft factories supplementing the output of the United Kingdom, the Fleet Air Arm has in the past year become a weapon of tremendous power, a power which is increasing as the months go by.

OWEN RUTTER.

CHAPTER IX.

A NEW TREATISE ON NAVAL STRATEGY.

"There are many good reasons," says the author of this book,* "for not writing a treatise on naval strategy at the present time." It is fortunate that the author, who is an American professor, has not allowed himself to be influenced by them, for his "Layman's Guide to Naval Strategy" is an extremely valuable attempt to fill what is surely one of the most remarkable voids in public reading matter. The lives of peoples are liable to be more deeply affected by wars than by any other phenomena. The conduct of wars, when they occur, is often influenced to a considerable degree by public opinion, whether instructed or otherwise. Yet it is no exaggeration to say that the average man or woman "in the street" has no real knowledge of the principles applicable to the waging of wars, while the literary means by which that ignorance can be converted into intelligent understanding are notable chiefly for their scarcity.

In setting out to remedy this deficiency, Dr. Brodie has therefore been engaged on a highly commendable task. His fitness for it is evident. His book is not only very readable, but gives abundant indication of his wide and well-digested knowledge of his subject.

The main study begins appropriately enough with a survey of what the author calls the "tools of sea power," in which term he includes both the different classes of ship and the weapons they use—the gun, the torpedo, the mine, and the bomb. This survey is admirably comprehensive and contains not only a mass of useful detail but an explanatory and critical commentary on the use and value of the various "tools" under examination. Guns have not changed much since the last war, but fire control has developed greatly both in complication and cost, the gear in the King George V of 1939 being twenty-five times as expensive as that of her namesake of 1912. Moreover, "a wholly new and revolutionary device has just been perfected," which has still further increased the gun's effectiveness.

As between shell and aircraft bomb, the former has the greater penetrative power, due to its higher hitting velocity, amounting probably to double that of the bomb on impact. The gun, at long as well as short ranges, is also a good deal more accurate than the bomber even when its bombs are dropped from low levels. The aircraft itself can be produced in large numbers, but ton for ton no vehicle of war is so costly, and it would be a mistake to regard aircraft as being generally a cheaper means of doing the warship's work, even where it can do it at all. The submarine actually stands pre-eminently among naval destructive agencies as having undoubtedly accounted for a higher combined total of war and merchant ship tonnage than any other combat craft on or above the surface.

The submarine's main weapon is the torpedo; but the latter is also at the disposal of the surface vessel and the aircraft, the Bismarck receiving torpedo hits from destroyers, a cruiser, and carrier aircraft during her brief dash into the Atlantic. Four out of the five British battleship losses up to 1944 have been due to the torpedo; but this, as the author sagely remarks, does not prove that the torpedo has rendered battleships obsolete but that the latter's anti-torpedo protection needs improving.

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* "A Layman's Guide to Naval Strategy." By Bernard Brodie. (English Edition. Oxford University Press.) Price 7*s*. 6*d*.

The course of the war has not disproved, as some predicted, the necessity for carriers. Rather has it done the opposite, even in regard to narrow waters where it had previously been assumed that shore-based aircraft would reign supreme.

" The Italian Navy never provided itself with aircraft carriers, due not to a lack of air-mindedness in Italy but to an excess. Italian military airmen derided the aircraft carrier as being excessively vulnerable to aerial attack, an attitude common to the extremely air-minded in all countries. But even in the narrow Mediterranean, . . . the land-based aircraft which the air extremists usually prefer were simply not on the spot when needed."

Of the future of battleships, the author speaks with no uncertain voice. He does not believe in their obsolescence, just as he has a lively sense of their essential value in this war. Indeed, in the latter regard, he pays them a strikingly worded compliment. " Never," he says, " have so many nations owed so much to so few ships."

The valuable preliminary survey of the " tools " of naval warfare is followed by a discussion of the uses to which they can be put. These are considered under the appropriate headings of " Command of the Sea," " The defence of shipping," " Land-sea operations," and " Bases." The subjects dealt with in these chapters, as their titles indicate, cover the main field of warfare at sea and include such matters as " cover," convoy, diversionary routing of shipping, and amphibious operations. The treatment is lucid and thorough, and the principles discussed are illustrated by numerous practical examples from the present war as well as those of the past.

It is refreshingly distinctive of the author's approach to his subject-matter that he preserves an admirable independence of judgment, uninfluenced by and often critical of popular assumptions regarding contemporary strategical occurrences. Time after time he pauses to expose the incompleteness of popular diagnoses. " The preoccupation of news reporters with aerial bombardment has obscured the very large part played by naval batteries in the innumerable Japanese landings " in the Far Eastern fighting. Or again, on the day before it suffered its heaviest losses during the battle of Crete, the British Mediterranean Fleet had undergone a thirteen-hour air attack without receiving significant damage. The same kind of attack which is fantastically successful on one occasion will be a total failure on another. Unfortunately for a balanced public opinion, it is only the successful one which makes the headlines."

How much care is indeed needed to avoid the pitfall of hasty generalisation is shown by the fact that the author himself has not entirely escaped falling into the trap. " The German conquests of France and Norway," he says, " have given the final answer to those Britons who had insisted that England could and should fight a war of limited liability. It is now clear that what was most necessary to protect Britain's shipping . . . was an Army and Air Force sufficient, when placed alongside those of her allies, to keep the Germans from breaking through to the Atlantic."

If his preface is a reliable indication, the author was writing this in 1942, while the U-boat campaign was still at its height. Had he waited till the middle of 1943, he would have seen that the answer of the previous four years was not final. The later evidence justified, in fact, the doctrine of the British "blue-water" school that the right place to meet a naval danger is at sea and not on land. The dramatic decline of the U-boat offensive from May, 1943, onwards, after the surface and air escorts had reached reasonably adequate numbers, showed beyond question that the submarine menace could equally have been mastered in 1941 or 1940, had they then been available in the same strength.

The chapter, however, which the general reader will reach with the keenest anticipation at the present time will naturally be that dealing with the air aspect of sea warfare. In it he will find a notable exposition of a difficult subject, in which the author gives clear evidence of an ability to see the wood in spite of a dense and most controversial growth of trees.

The air has achieved great results in this war. But so have other weapons. The tank break-through at the hinge of the Anglo-French line in 1940 was at least as important as air action in securing the German victory over France; while on the eastern front, the excellence of the Russian artillery has been perhaps the main factor in the great Russian victories. Yet it has been predominantly the achievements of the aeroplane that have caught the public imagination. The reason is undoubtedly psychological. As the author says:—

"There is something captivating about flight. It is still so new, so beautiful to watch and to contemplate, so swift, that its value in peace and war, however great, is bound to be somewhat magnified. Wheeled vehicles and boats have been with us since the dawn of history; the aeroplane evolved only yesterday. We have not yet become accustomed to its marvellous characteristics. The result is that we tend to ascribe to it boundless potentialities and to reject other implements of war as outmoded."

But he goes on to issue a warning against the "dogma of innovation, just as blind and as dangerous as the dogma that there is nothing essentially new in war." Every new weapon of war starts with an inherent strategical advantage. Administrative humanity being generally unimaginative and also disinclined to meet economic trouble half-way, there is an invariable tendency for nations to be unprepared for dealing with warlike novelties, which therefore begin their belligerent careers with a substantial lead over the defence, a lead which gives them an initial opportunity to achieve more or less spectacular results. It was thus with the submarine in the last war, and it has been much the same with the aircraft in this.

The British and American warship losses from air attack, especially at Pearl Harbour and in the destruction of the Prince of Wales and Repulse in 1941, very naturally made a deep impression on world opinion, resulting in popular pressure on the Governments of more than one country in favour of the aircraft as against the surface war vessel. Dr. Brodie relates how, when the American War Production Board at the end of 1941 placed shipping ahead of bombers on the priority list, "a veritable shriek of indignation" went up all over the country, in the face of which Mr. Nelson felt constrained to revise the ruling. Yet ships were undeniably more needed at that time than aircraft. While the American forces on Bataan were conducting their heroic but hopeless defence without air support, a general in Washington replied sorrowfully to a questioner, "We have plenty of airplanes all right; all we lack is the means of getting them there ; " the " means " being of course the merchant shipping and naval force necessary to escort it to the Philippines.

Such stampedes of public opinion are among the inevitabilities of war, and it would be foolish to expect their total avoidance. Yet a detached onlooker might well have been less impressed by the naval losses inflicted at Singapore and Pearl Harbour by Japanese air attack than by the fact that it took the Germans nearly eighteen months to sink a British warship of any size by this means. In 1914, the German submarine had made a spectacular debut by accounting for three British cruisers on one day within three months of the outbreak of war. But the German air attack on the fleet in Rosyth in October, 1939, achieved practically nothing ; and that on the ships in a northern base a few weeks later very little more.

Pearl Harbour, more than two years after the first outbreak of world war, certainly seemed a striking illustration of the new-found power of the air. Yet it has to be remembered that American negligence on that occasion gave the Japanese every advantage. The first attacking wave was noted by radio-detector when it was still more than 130 miles distant, a warning allowing ample time for the American defences to be made fully ready. But although the initial attack met virtually no opposition and the major assault was concentrated against the American battleships, even then only two were totally incapacitated.

High initiative on one side and inertia on the other provide a combination specially favourable to striking results, irrespective of any special potency in the weapons used. Greater and more lasting strategical results than at Pearl Harbour were actually obtained by the Japanese surprise destroyer attack on Port Arthur in 1904.

Where reasonable precautions have been taken, ships in harbour have proved singularly difficult to destroy or even seriously damage by air attack. The British naval loss in this respect has been very small and has included no important units. Even the desperate dive-bombing assaults on the Illustrious in Malta, conducted with heavy loss to the attackers, failed in their main object of putting the ship out of action. Dr. Brodie mentions the case of the Scharnhorst and Gneisenau in Brest " under the very nose of the R.A.F.," against whom the " 4,000 tons of bombs aimed in 3,299 bomber sorties " did not prevent the ships steaming at high speed up the channel. Of the three German capital ships destroyed at sea up to January, 1944, two were accounted for by surface vessels alone, and the part played by aircraft in the sinking of the third was an important but not a major one.

In dealing with the Cretan affair, the author considers that British ill-equipment and lack of imagination played into enemy hands almost as effectually as American unpreparedness at Pearl Harbour. The capture of Crete was hailed at the time as the herald of the new invasion technique of " the air age." But the Germans did not choose the air-borne method of invading Crete because that was the better way. On the contrary, the " terrific pounding they took from the weakly-armed defenders evidently dissuaded them from at once repeating the feat elsewhere."

In discussing the likely effect of air power on the future of the surface vessel, the author deals uncompromisingly with the more extreme air dogmas. He reminds us that the disappearance of the battleship has often been prophesied. The advent of the torpedo caused the First Lord of the Admiralty, at the launching of the Trafalgar in 1887, to express the opinion that she would probably be the last battleship to be built for the

Royal Navy. Similarly, the advent of the submarine caused Admiral Sir Percy Scott to pronounce the battleship " dead." There is nothing very unusual therefore in the same claim having been put forward on behalf of the aircraft.

The test of the present war has actually shown the survival value of the capital ship to be surprisingly high. No more than five such British vessels had been sunk up to the end of 1943, while the only certain total casualties in that class from air attack seem to be two British, two American and one Italian in more than four years of war. Nor can this low fatality list be ascribed to the inactivity of the ships concerned. They have been often at sea. In the Mediterranean especially, they have taken part in many operations in close or semi-close support of amphibious fighting, where they were within easy reach of enemy aircraft that might care to attack them, and no less exposed to hostile submarines. At Salerno, in particular, they stood in close to the beaches in a manner reminiscent of the Gallipoli campaign, and even more ancient operations.

In discussing the question of the comparative cost of the surface ship and the aircraft, Dr. Brodie does not hesitate to describe as a myth the idea that the aircraft represents a cheap substitute for the warship. He quotes Major Seversky as describing hypothetical planes, carrying fifty torpedoes each, which would be capable of sinking ten battleships apiece with five torpedoes per battleship. Apart from the fact that such aircraft have not yet been built and would be very large targets if they were, and that modern battleships will not necessarily sink after five torpedoe hits, Major Sevensky appears to base his calculations on bloodless air victories, in which none of his huge aircraft would be shot down, none of the torpedoes would miss, and in which there would be a perfect distribution of torpedo hits between the targets.

War, however, does not work out like that. Dr. Brodie very appositely mentions that the German destroyers at Jutland carried enough torpedoes in their tubes to destroy the entire British battlefleet twice over. Yet only one battleship received a torpedo hit and she did not sink. As the author says :—

" It is important in discussing the airplane to mention its limitations as well as its advantages, its failures as well as its successes. To do otherwise is simply bad reporting. It might be worse than bad reporting ; it might be a sinister kind of propaganda."

His general conclusion on the subject of fleet composition in the air age is in line with the whole of the previous history of fleet development. It is that air power will not displace surface power but be added to it. Battleships must be balanced with carriers ; but the battleship, he thinks, will remain the final arbiter in fleet actions.

The chapters on " Fleet Tactics " and " The men behind the guns " are closely related. In the former, a general discussion of the salient tactical features of a number of naval actions of this and previous wars precedes a description, with useful diagrams, of the more common manœuvres applicable mainly to the large fleets of the 1914–18 pattern. The author has gone slightly astray in saying that once contact has been established with the enemy, a battle line proceeds by " what are called equal speed manœuvres." In general, however, he gives a reliable and concise outline of naval tactical problems, which concludes with a brief description of the battle of Jutland as illustrative of the tactical principles under examination.

In discussing the deployment, the author confines himself to appraising the relative merits of deployment on the port and starboard wing columns. His verdict in favour of the port wing column will hardly be challenged, but he is on shakier ground in asserting that this manœuvre brought Jellicoe between the enemy and his base. Its immediate effect was almost the complete reverse. What might have achieved that desirable object was an opposite course (or what was then known as a 9 pendant) deployment, which would probably have taken the Grand Fleet to the south of the High Seas Fleet before the latter had realised what was happening. It is surprising how little attention this possibility has received.

The chapter on the "men behind the guns" deals with the moral factor in war and enlarges on its very great importance. The author advances numerous instances of resolution and determination on the part of a leader triumphing over material inferiority and other adverse circumstances. He reminds us of Lord Cochrane's amazing successes against superior odds, that Nelson was inferior at Trafalgar, that in the Russo-Japanese war Togo disposed of a Russian Navy roughly twice as powerful as his own fleet, and that Vian repulsed an immeasurably superior Italian squadron near Malta. He utters a warning against the popular slogan that this war is " one of machines and not of men," declaring that the spirit and intelligence of the human element and particularly the leaders will ultimately be the deciding factors.

He gives example after example, admirably chosen and skilfully analysed, of the immense importance of the quality of the leadership of any force. Not the least interesting is the story of the fluctuating morale in the Bismarck where the spirit of the ship's company, after being raised to a peak of confidence by the sinking of the Hood, was suddenly dashed into a trough of despondency by an amazing speech by the Admiral, in which he implored the men to meet death like good Nazis. This disastrous speech shows clearly that the possibility of defeat had been lurking at the back, and perhaps even in the front, of the admiral's mind from the start. A Paul Jones, as the author's quotation about him brings out, would never have allowed himself to think of defeat until his ship had actually sunk under him, and perhaps not even then.

Yet notwithstanding his profuse array of evidence, one gets the impression that the author does not quite feel the same conviction as in other parts of his book. He is, for instance, distinctly non-committal over Jellicoe's turn-away at Jutland. He sets out the contrasting arguments fairly enough. Those favouring caution were, as he says, that it was both unnecessary and imprudent for a fleet that already enjoyed the command at sea to take avoidable risks, involving the whole outcome of the war, for the sake of "sinking some German ships": the counter-argument being that the enormous moral effect of the annihilation of the German Fleet must by itself have shortened the war, apart from its influence in facilitating the defeat of the U-boat.

The author is far from decided in adjudicating between these two views. If anything, he shows signs of leaning over on the side of caution.

"There has been too much loose talk about . . . the gods favouring the bold. It is true that the gods favour the bold, usually, but they are notoriously harsh with the reckless."

Or again—

"Boldness is a great virtue in a fighter, and wars are won by hitting hard, fast, and often; but when an asset of the value of a battle fleet is at stake, an admiral must scrutinise risks well before he accepts them."

But such judgments leave the argument inconclusive in the absence of definitions of recklessness and of the process of " well scrutinising risks," which the author does not give.

To distinguish the beginning of recklessness from the end of boldness is undoubtedly very difficult indeed. But it ought not to be left unattempted where a vitally important strategical concept is made to depend on the distinction. The expounder of principles cannot but suffer in authority to the extent that he himself appears to remain undecided as to the practical application of the principles he expounds.

The strategical imponderables such as leadership and the willingness to take risks represent the main switchboard of strategy. The wiring, junction boxes and fittings of the naval strategical system must be run, fixed, and properly connected up if the installation is to operate at all. But its efficiency of operation must mainly depend on the way the switches are made and broken in the nerve centres of the leaders' minds. The vital questions relating to the workings of those minds are therefore primary matters for careful analysis. As it is, the author's hesitation to commit himself too definitely betrays him into conveying the paradoxical impression that an inferior fleet can legitimately take risks which would be inadmissible for a superior one.

This tendency to sympathise with caution by the superior fleet does not, moreover, conform to the opinion the author expresses in the previous chapter that the Japanese made a mistake in sending less than their full strength against Midway Island.

" They would have been risking not more but less to have used their whole fleet. . . . All the experience of war indicates that with greater force they would have suffered not more but less total damage, and would have had a far better chance of attaining their objective."

Nor will the author's statement that there is no such thing as a naturally seafaring people be universally accepted. The history of naval warfare surely points to the contrary. How, otherwise, can the marked and consistent difference be explained between the British naval policy of always seeking decisive engagement and the French predilection for the ulterior object ? And surely, again, the startling superiority of the Japanese naval strategy over the Russian in 1904–5 was not wholly unconnected with Japan being an island. In everyday life, the greater aptitude of different individuals for one form of activity rather than another is not disputed. There seems therefore no inherent reason why some nations should not possess a greater sea sense than others. The author states that " no serious historian has denied " that the fighting inferiority of the German High Seas Fleet to the British Grand Fleet lay in weight of metal alone. Yet cautious as the British leadership at Jutland may have been all the indications are that after contract between the two main fleets had occurred the German Command was actuated by no offensive intention at all, and that its one object was to break off the engagement.

Debatable, however, as some of his judgments in these last chapters may be, Dr. Brodie does not fail to give the reader a clear and frank statement of the pros and cons of controversial points, and leaves him in no doubt as to the importance of the moral factors in war, from whichever angle his own personal mentality may incline him to view them.

In his main object of writing a treatise on naval strategy which would appeal to the layman, the author should have succeeded well. His book is simply written, interesting, and instructive. It is packed with material attractively set out, and analysed with a skill and insight clearly indicative of much study and wide knowledge. If the professional can contest some of his opinions we will also admit that there are other professionals who would probably support them, while not a few of the author's conclusions can be regarded as valuable contributions to the elucidation of some of the most burning strategical problems of the present time. The lay reader, to whom the book is primarily addressed, will find it a sound and stimulating guide to an understanding of naval warfare.

RUSSELL GRENFELL.

CHAPTER X.

THE PRESS AND THE NAVY.

In May, 1940, a notable step forward was taken in the relationship of the Press and the Navy. It was a development on the naval side which, in the stress of those fateful days, did not receive the notice that it would have done had it happened at any other time. For the first time a Press Division was established at the Admiralty.

Previously there had been a Press Section, part of the domain of the Director of Naval Intelligence. The decision to create what, in effect, is the Public Relations department of the Navy to the dignity of a Division, was, I believe, one more example of the long-sightedness of Mr. Winston Churchill. It was a compliment to the Press but, to a much greater degree, it was a straightforward acceptance of the fact that modern war conditions call for the highest form of co-operation and understanding between the Press and the Services.

From the earliest days of the war it had been laid down that, as far as it could possibly be so, the Press of this country should be free to state its views and report the progress of events. Not only were the principles of Dictatorship and the suppression of individual thought and speech things that we were fighting against, but there was no doubt that a controlled and regimented Press would not have been acceptable to the British public.

It was decided, therefore, that the Press should be subject to no more than a voluntary censorship and that " the terms of reference " for the censors should call for censorship under two main heads only, i.e. of anything that might affect the morale of our people and of anything that might be of assistance to the enemy. It is obvious that these terms were broad enough to allow of considerable differences of opinion. And, in fact, these differences of opinion have arisen constantly. The strength of the arrangement has been proved, however, because the amicable settlement of these differences automatically set up machinery that was governed, not by cast-iron rules, but by common sense, good faith and understanding.

In a world foreshortened by modern methods of communication, there was clearly a big problem to be faced in providing a news-conscious public with the measure of information it was entitled to, without divulging vital facts to a watchful enemy.

The Admiralty had a major interest in this problem and the day was long since past when the attitude of " Give 'em nothing, and be on the safe side," could even be considered as an answer. The establishment of a Press Division quite early in this war was a clear indication that, far from wishing to play down their relations with the Press, the Admiralty readily accepted the increased importance of all forms of news dissemination in wartime.

As a newspaperman who has had a close association with naval matters both before and after these developments, I feel that there are a number of interesting angles that may be set on record. I avoid the term " Naval Correspondent " because in Fleet Street there has grown up a nice distinction between the man who reports on naval matters and the one who enters the field of the expert on naval affairs, and it is the latter who is accepted as the "Naval Correspondent."

When I visited H.M.S. Norfolk recently and saw the "honourable scars" that marked her gallant part in the action which resulted in the destruction of the Scharnhorst, I recalled my first sea-going contact with the Navy. I went to her as a keenly interested young reporter, a few months after the Invergordon "incident." And it was at Invergordon that I joined her.

Her Captain was James Somerville (now Admiral Sir James Somerville, C.-in-C., Eastern Fleet). I can think of no more fortunate introduction to the Fleet than to be in the ship commanded by this officer. His charm of manner is now renowned throughout the Navy and, indeed, in even wider circles, but what impressed me most when I first met him all those years ago was his efficiency.

Sitting in the first wardroom of which I had been made an honorary member, I saw the man who ruled with almost royal authority in that fine big cruiser, ask permission to enter. He wore a heavy white sweater, having just returned from his favourite exercise of pulling a small boat around the squadron. Sitting on the arm of a chair he discussed the "possibilities" for the competitive general drill that was to take place the following day. All kinds of ideas were put forward. When one was accepted, plans were worked out to meet the sudden demands that might be made on any part of the ship's company.

Captain Somerville himself suggested certain dispositions and I believe that he was responsible for the arrangement which put the ship's blacksmith on duty as a Marine sentry. This powerful individual was right on the spot to carry out certain work which gave the Norfolk a clear cut win in one of the drills the following day. In the aggregate, the Norfolk beat her sister ship the Dorsetshire by a handsome margin.

What was impressive about that conference to the observer was the tremendous keenness that was aroused among all the officers by this heart-to-heart talk with their Captain. Straight away I saw one of the finest examples I have ever seen of how a ship can be knit together by a first-class Commanding Officer.

Before passing on to other observations I would take the liberty of recalling one or two rather amusing incidents concerning this man who has played such an important part in our war at sea.

On one occasion when I was a visitor to his ship, two torpedoes went astray. In those pre-war days torpedoes were worth their weight in gold, and several ships were detailed to carry out a prolonged search for the missing weapons. After two or three days when there was still no order to call off the search, a hint was conveyed to the "Press" that if the eyes of the public were removed from the scene there might be a chance for several hundred men to make port by the week-end. I duly disappeared, to make an extremely uncomfortable journey of twenty miles or so in the drifter!

On another occasion I visited H.M.S. Norfolk during a Royal Review. Her Captain, who received me with his usual charming hospitality, was intent on rigging a model vessel. His work was wonderfully neat, and I remarked on the thin "string" that he was using. "String!" said he indignantly, "Why, I might tell you that this ship uses more surgical gut than any other ship in the Navy!"

A great pet of the captain's about that time was a highly dignified

"Ginger" cat. From time to time word went round that the captain had lost his cat and a great hunt was started. Later, when he went as Commodore to Portsmouth, the cat went with him. During a Press visit to the barracks, I met the Commodore in the company of two notable Admirals. He greeted me, and then, with two mystified Admirals listening, told, in rich Cockney mimicry, this story of the Ginger cat!

"Yes, I have got him down here with me, but he has been a bit of trouble. When I came down to my office this morning I found considerable disorder and a pair of boots in one corner. I asked my Cockney servant what was the meaning of it. 'Well, sir,' he said, 'It's that there Ginger cat of yours. You see, sir, there's another cat that's been 'ere for a long time and 'e 'as not exactly taken to your Ginger cat. This morning they got to fighting and, believe me, sir, it was not until I took me boots off and threw at 'em that I could separate 'em!"

In those pre-war days I was accepted as "the Press" in many of H.M.'s ships. There was always a friendly greeting and if one became known in the wardroom as "Lord Northcliffe" it was intended as a compliment to the Press generally. In H.M.S. Hood I slipped through the Straits of Dover at night, attempting to evade the R.A.F., unconsciously rehearsing the grim reality of the Scharnhorst and Gneisneau in later years. Among the many memories of that famous ship are its dogs. There were no less than three, the ship's massive bulldog, the Commander's sealyham and the Engineer Captain's cairn. The last-named was only seen once during the day—when he came and waited patiently outside the wardroom and after being let in, found his master in his favourite armchair after lunch and perched on his shoulder for a short while. He was a model of good behaviour—which is more than could be said of either of the others.

In the Rodney there were the big gun shoots—a time of shattering noise and disturbance. In the Barham, Malaya and Valiant more typical "big ship" days were spent. In the Renown there was the strong sporting element, with the 38 years old Marine Major, who had been heavyweight boxing champion of the Navy, giving lessons to eager young midshipmen and sub-lieutenants.

It was, I believe, in the Valiant that the Press became goods and chattels for the purposes of a competitive drill. Knowing that the ship would be "upside down" in the desperate striving to beat the Barham, I had discreetly retired to my cabin. Things progressed apace to the accompaniment of many loud bangs and crashes. Suddenly there was one outside the cabin curtain. A midshipman, so breathless that he could hardly speak, put his head round the curtain and said, "Sir, you are wanted at once on the quarter-deck." He almost dragged me up on deck and I was bundled in a boat and rowed frantically towards the Barham. Only later did I discover that one of the Orders, opened at a precise time, had said, "Send Press representative to H.M.S. Barham." The Barham received a similar order, but unhappily had no Pressman on board. They made do with the chaplain.

For the Press, too, there was an exciting chapter in the Mediterranean during the visit of the Prince of Wales. It began with the destroyer Arrow arriving in Brindisi harbour. The Italians, expressing their growing arrogance, had taken the Royal baggage into the Customs, although it was all marked for full diplomatic privilege. No argument advanced by those responsible for the baggage had succeeded in getting it out of the

Customs. The situation was explained to the commanding officer of the Arrow, Lieut.-Commander Jack Bickford (who, later, as Captain D, was to die so gallantly in taking part in the rescue of the British Army from the beaches at Dunkirk). It was a situation that presented no difficulties to the young British naval officer. He paraded a naval guard who, under an even younger officer, marched to the Customs and, permitting no argument, collected the baggage and took it aboard H.M.S. Arrow. The Italians did not even protest.

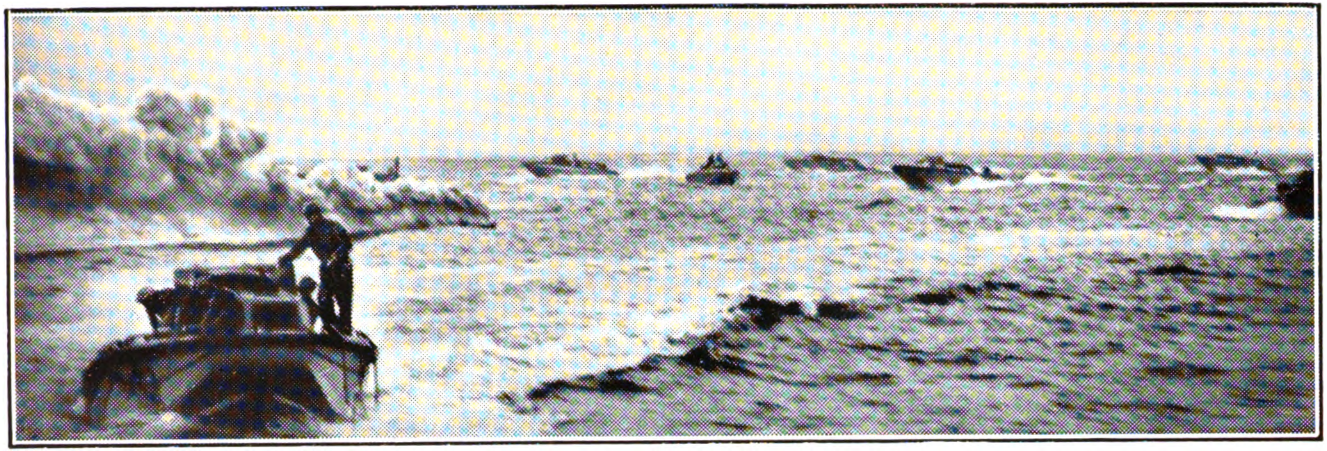
Having returned from France as the Germans entered Boulogne, I was at Dover in June, 1940, for the return of the men from Dunkirk. Standing at the end of a gangway, helping deadly weary soldiers as they set foot once more on English soil, I saw a four-ringed naval captain. It was Jack Bickford. He was very tired himself and had been across to bomb-battered Dunkirk four or five times. " You have brought them home, why not get some rest ? " I suggested. He smiled, and said, " There will be plenty of time for rest later on." They were tragically prophetic words because he was mortally wounded on the next trip a few hours later.

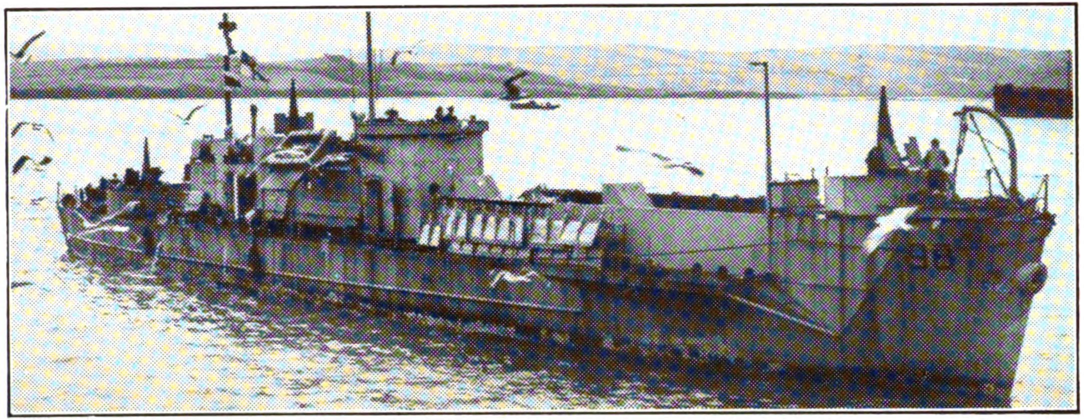
To return for a moment to those seemingly far-off days of peace. In the Mediterranean, in the Revenge, following in the wake of H.M.S. Queen Elizabeth, I watched one of the Navy's first multiple pom-poms fire a mass of black bursts into the sky which resolved themselves into the Prince of Wales' feathers. Later, in the aircraft-carrier Glorious, there was a dramatic series of events when the ship ran into fog after flying off The Prince of Wales, the Duke of Kent, Lord Louis Mountbatten and a number of planes. Captain Kennedy-Purvis (now Admiral Sir Charles Kennedy-Purvis, deputy First Sea Lord), who had been in command of H.M.S. Glorious a short time previously when, in very similar circumstances, she was in collision with the liner Florida, had to make a big decision. The Prince had been landed-on just as the Glorious slipped into the fog. With the responsibility of the presence of the heir to the Throne added to that of his ship, he had to decide whether to go all out to clear the fog and save the aircraft still in the air, or to play for safety and proceed at slow speed. The latter course would almost certainly have meant the loss of some of the machines, and most probably their pilots, because the fog proved to be about fourteen miles in extent. Without any hesitation, Captain Kennedy-Purvis put on speed and cleared the fog in time to enable all planes to land-on safely, although some of them had only a few minutes margin of petrol left.

Arriving in Malta, the aircraft-carrier went into the big German dry dock which was towed to the island after the last war. Living in a ship in this " iron box " in mid-summer did not prove very attractive. But Malta itself offered other attractions—the Union Club, the Casino Maltese, the Sliema club and Wrexford's.

Years later I was present in H.M.S. Orion for another Review carried out by the same Royal personage—the only Review of the Fleet by King Edward VIII. It was at Portland. A terrific storm swept over the narrow neck of land between Portland and the mainland on the night before the Review and the Royal train was marooned. Going out from Weymouth, it was necessary to leave cars about half way along the road to Portland and clamber up on to the Chesil beach in order to reach the harbour, the road being flooded to a depth of several feet.

The King of Denmark, an honorary Admiral in the British Navy, came on board another cruiser, H.M.S. Newcastle, when I was visiting





Above : Landing craft using a smoke screen when approaching a beach.
Below : Landing ship, Infantry, Large.

(*Official photograph. Crown copyright reserved.*)

her not long before this war. With two British destroyers, the Newcastle was at Aahaus, when the King of Denmark arrived there in his yacht. As the Royal yacht came in shortly after 8 o'clock in the morning, the King appeared on the bridge and took the salute of the ships of the Royal Navy. Later he made a thorough inspection of the British cruiser, at one point alarming the senior officers who were escorting him by slipping down a gangway. The King was not hurt, but at the next steep gangway he came to he turned and said, with a twinkling eye, " So you mean to kill me ! "

I was on the signal bridge of H.M.S. Newcastle when, on the way to Denmark, we encountered three United States warships, led by the U.S.S. New York. The meeting provided an impressive example of the efficiency of the Signals branch of the Royal Navy. The Yeoman of Signals had passed two messages to the bridge before I realised that he was actually reporting the presence of other ships. Long before their super-structures had appeared over the horizon he had identified the vessels by their mastheads. Very flatteringly, the American battleships, having exchanged salutes with the British cruiser, altered course in order to get a closer view of a type of cruiser they had probably not seen before.

With the outbreak of war, the good relations of the Navy and the naval reporter continued, although I personally was despatched to France with the B.E.F. and lived with the army until the time of the German break-through. In view of this association with the land Service it was perhaps proper that my return to the Navy should come through the Combined Operations command. With no more orders than to report at a London railway terminus, I caught the " Jellicoe special " one morning and found myself a good many hours later at Scapa Flow.

The ship I was taken to was a very curious " H.M.S." Even to-day no details can be given about her, but she can be described generally as a " Commando ship." With a considerable naval force we proceeded north and on Boxing Day, 1941, arrived in the Veste Fjord (inside the Lofoten isles) off Reine.

The British and Norwegian naval forces sailed into the Fjord at Reine and coolly dropped anchor. The Commandos went ashore in the darkness and, in the course of several landings, took German prisoners and cleared all the enemy outposts over a considerable area. The Germans attacked with aircraft and one which ventured into the Fjord, was shot down. There was an amusing incident when one of the German prisoners was questioned about his medals. He had received one of them, he declared, for the part he played in the sinking of a British destroyer some months earlier at Narvik. When he was told, " That destroyer is waiting outside to take you to England," it was nothing more than the truth. The Navy played a very important part in this expedition and it was largely to their credit that some important results were achieved without the loss of a single man or vessel.

The Navy found room for a Pressman in the Combined Operational raid on St. Nazaire. This was the great day—or, perhaps, " night " would be a more correct description—of the " little ships." Motor launches made up the major part of the small fleet that went to St. Nazaire. In the motor-gunboat which led the assault on the enemy-held stronghold, I watched the magnificent fight put up by these little vessels in the face of intense gunfire at close range from both sides of the Loire estuary. The work of the Commandos who got ashore is beyond praise, but undoubtedly the supreme moment of that never-to-be-forgotten night was when H.M.S. Campbeltown (Lieut.-Commander S. H. Beattie, R.N.), gathering speed for the last lap of her historic journey, crashed into the massive dock gates. Her reinforced bows reared into the air and flames licked along her forecastle as she came to rest.

On the orders of Commander R. E. Dudley-Ryder, R.N., the motor gunboat went round her stern and alongside the old entrance to the basin. In the light of big fires raging ashore, where the Commandos had caused devastating explosions, of burning M.L.'s and of the ceaseless tracer shells, I watched the gallant men who had sailed the Campbeltown to her last resting place, straggle down to the jetty. They brought their wounded with them and we took many of them on board the gunboat. Others went into one of the M.L.'s which, alas, was fated never to escape from that inferno of fire.

Few of the little ships that so boldly attacked the Germans in their stronghold returned to England. Some of them, such as the gunboat, miraculously escaped from the estuary but had to be sunk by our own gunfire subsequently. Outside were the two British destroyers, H.M.S. Atherstone and Tynedale. In the early hours of the morning they encountered a superior force of enemy torpedo-boats. The Germans, however, avoided close action and it was to the Atherstone that the wounded men of the gunboat were transferred an hour or so after dawn. At about 9 a.m. two other destroyers, H.M.S. Brocklesby and Cleveland, arrived on the scene. The Germans attempted to attack the force from the air as it withdrew, but without success.

It is easy to pay tribute to the magnificent gallantry of the naval men who went to St. Nazaire, many of them R.N.V.R. officers or " hostilities only " ratings who were seeing action for the first time, but the work of the Navy in less spectacular fields must never be forgotten. H.M.S. Woolston provided me with a typical instance of this work. I asked for permission to visit a ship that had seen long and constant war service without being concerned in any major engagement with the enemy. It was to H.M.S. Woolston that I was sent. As we steamed up through " E-boat Alley," guarding one of the regular coastal convoys that sail around our shores, I heard of the long and weary nights, through all the seasons of more than three years, that this destroyer had performed similar duties. Not once had she engaged the enemy in hard, straightforward fighting, yet every night called for the same unfailing watchfulness from her officers and men. I saw the dogged way they carried on—and they were surprised when I suggested that their record of service was a very fine one.

In the same way, when I went out into the Atlantic in frigates, corvettes and minesweepers, it was difficult to persuade those who were such wonderful hosts to " the Press " that there was plenty to write about without outstanding events, such as the sinking of a U-boat. In H.M.S. Towy, as the first naval correspondent to cross the Atlantic in one of our new frigates, I saw the amazingly high pitch of efficiency to which the Escort groups have been brought.

Later, from Newfoundland and ports on the Canadian eastern seaboard, I was able to go out in the ships of the Royal Canadian Navy and see how well the men of the Dominion have fitted in to the indomitable force that has met the U-boat challenge in all its phases. In a typical straightforward Canadian manner, their crews joked about the " starchiness " of the Royal Navy, and, in the same breath, declared that " what was good enough for the Royal Navy would always be good enough for the Royal Canadian Navy."

On board Polish, Dutch, French, Norwegian and Greek fighting ships the Press, in its capacity of independent observer, was able to record a similar underlying affection for Britain's senior service. Far from letting down their British comrades, all of these nations have provided, at one time or another, seamen who appeared almost over anxious not only to equal but to surpass the standards which are acceptable to ourselves. I would mention the French corvette Aconit, which I have been on board on more than one occasion. She sank two U-boats in less than ten hours, the second one when she was racing back to the aid of H.M.S. Harvester. She saw the crippled British destroyer torpedoed and turned and rammed the U-boat responsible before picking up the survivors of the Harvester.

An important development in the relations of Navy and Press, which I have yet to mention, was the appointment comparatively recently of a very senior and distinguished retired Admiral as Chief of Naval Information. Admiral Sir William James, formerly C.-in-C., Portsmouth, was the man chosen to fill this post.

His advent gave the Press Division a much bigger " gun " than it had ever had before, if one may be permitted to use the term.

From the first, Admiral James has shown the greatest enthusiasm for this new sphere of activity. His efforts to further the cause of " Naval Information " have covered a wide field. Among the long journeys he has undertaken was a personal visit to Admiral Sir Andrew Cunningham when he was C.-in-C., Mediterranean.

Sir William has been kind enough to give me his views about the subject on which this chapter is written, and I am happy to quote them as an outstanding proof of the Navy's understanding of the Press and the functions it can, and does, perform.

Here, then, are the views of the Chief of Naval Information: " The Navy has been called the ' Silent Service.' It became so called during the long period when there was no maritime war and when the ships were nearly all abroad and never seen by the people. It was not a ' Silent Service ' in the golden age of our Naval supremacy when famous Admirals were seen constantly in London and the Naval dispatches were best sellers. Nor was it a ' Silent Service ' during the ten years preceding the first World War, when the Navy changed from a few slow battleships and cruisers to a vast armada of Dreadnoughts, fast cruisers, destroyers and submarines. Lord Fisher, who was mainly responsible for the building up of this new fleet found a great ally in the Press.

" It was imperative to keep before the people the importance of our sea power and it was the Press who educated the people so that they were ready to face the enormous annual expenditure on their Navy. Naval correspondents attended manœuvres and through their articles the veil was lifted from the mysteries of naval tactics and naval warfare. The Navy learnt then that the Press would never betray a trust and would never divulge matters that were on the secret list.

" Now that we are fighting a great maritime war the Press is once more the Navy's strong ally. It is of the greatest importance that the people should know as much as possible about the part played by the Royal Navy in the war afloat. Even if a naval man does not like publicity for himself he does like his parents or his wife or children to know something about what he is doing and the life he is leading. Naval war is analogous to a play performed by skilled actors behind footlights of steady moderate brilliance, which has sudden dramatic moments when the spotlights are all turned on the actors. The dramatic event in the sea war is rare, and so it is the stories of the life on board ship, of landing operations, of convoy work, of long drawn out hard-pressed attacks on submarines, that bring home to everyone the intensity of the naval effort. It is these stories which are so admirably presented to-day by the Press. The Press correspondent is always a welcome visitor to a man-of-war, and in wartime these correspondents face the same hazards as the men in the Service, in pursuit of their important task of telling the people about the big ships and the little ships, who make the sea lines of communication safe for our armies and our sea-borne imports.

"The strain of war tends to bring people closer together and to-day the Press is giving great service to the Navy and that means in turn a great service to the war effort. The pressman seeking for news often goes away disappointed because news with a high-interest value often cannot be released for security reasons. But after four years of close co-operation, the Navy understands much better the problems of the pressman and the pressman understands much better the reason for the anxiety of Naval authorities to avoid giving even a hint that may jeopardise future operations or cause the loss of a ship."

In this very interesting and, from the Press point of view, generous estimation, Admiral James declares, "the Press is giving great service to the Navy." For the Press I would say that it realises to the full what it owes to the Navy, because without the Navy this nation could not have survived, and one of the first things to disappear in any form of dictatorial government is a free Press. It owes its very existence to the Navy and all those who have fought for the cause of liberty.

GORDON HOLMAN.

CHAPTER XI.

THE MAN AND THE MACHINE.

Reference to the comic papers of forty years ago throws an interesting light on the apprehensions aroused by the mechanical and electrical inventions that were being turned to practical use in ever-increasing flow. The human being in five hundred years would consist of a large head on a puny body. All his needs would be satisfied by pressing a button. For food he would suck tabloids containing vitamins in correct proportion. Though the comic artist and humorous writer revelled in the exaggerations, which are the basis of much humour, there was a modicum of truth in their prophesies. If, owing to mechanical contrivances, manual labour was no longer necessary, man would inevitably deteriorate physically unless he bestirred himself and found an antidote to the deleterious effect of sitting all day watching a machine, or all day with a book or a ledger.

Man did bestir himself and there sprang up a vast range of activities for young and old which kept them physically fit. Golf links, football and cricket grounds, tennis courts, swimming pools, boating and sailing clubs, all sprang up like mushrooms in every corner of the land, and with the far better travel facilities, people with the smallest incomes were able to enjoy a holiday at the seaside or abroad. Man refused to be condemned to a living death.

In the Navy the sudden onrush of mechanical and electrical inventions had exactly the opposite effect, though the older sailors were just as gloomy about the future as the humorous artists and writers of their day. When Lord Fisher began to concentrate the Fleet for the inevitable war with Germany and paid off most of the small sail-cum-steam ships on foreign stations in order to put the men and money into up-to-date fighting ships, many of the older sailors talked of seamanship as a dying art and one that would in a few years be dead. Soon everything in a man-of-war would be done by pressing a button; mechanics not sailors would be required. The smartness and courage and agility of the man who reefed a topsail in a gale, the ability to deal quickly with unexpected situations which had been such a marked characteristic of the British sailor, the physical strength produced by long pulls in open boats and constantly hauling on ropes—all these fine attributes of the sailor would disappear, and, instead, a lot of slack-looking mechanics in overalls would man the Fleet.

Whilst it is true that the impact of the new stirring throughout the country was felt in the Navy, and that recreational facilities were greatly increased and general health improved by the introduction of dentists and better cooking, it is also true that each new ship that was launched produced a greater, not a lesser, demand for those very attributes that were rightly claimed for the sailor of the sailing ship era. The old sailors looked at the Dreadnoughts, the fast cruisers, the new destroyers, the submarines, and mournfully decided that there was nothing left to compare with the seamanship required to beat up a narrow channel in a sailing ship. This was a misinterpretation of the meaning of the word seamanship. Seamanship is defined in the dictionaries as " the art, or skill in the art, of working a ship." Good seamanship was important in the days of triremes; it became more important in the days of sail, and it became still more important when the new steel, steam-driven ship appeared, because with every change in type there was an increase in speed, and every increase in speed demanded greater "skill in the art of working a ship." It is true that the sailing-ship men had to be more weather-wise than their successors. An officer of the watch in a ship under sail who failed to detect the signs of an approaching squall might suddenly find he had lost a top-gallant mast and that some of the sails were in ribbons. A good knowledge of weather lore enabled a captain to make wise decisions on the sail to be carried through the night. A modern steam-driven ship is unaffected by a squall, though the captains of modern small craft, such as the M.T.Bs., are far better equipped to make decisions if they are well versed in weather lore. Club-hauling a sailing ship off a lee-shore, or making short tacks through a strait, called for a high standard of seamanship; but these were rare events in a commission, and when a sailing ship was on passage it was seldom imperative to take immediate action.

The time to tack ship was, as often as not, synchronised with the time that the ship's company had finished some other work. If it was more convenient to tack ship just before piping to dinner, then that was the moment selected. The speed was so slow, the sea so wide, that there was no urgency. But the "art of working" a fast cruiser or destroyer permitted no such leisurely habits, and as the speed of the destroyer increased and its main function became the night attack, all the attributes of the sailing-ship man—the ability to deal quickly with unexpected situations, courage, the quick eye—were in demand in much intensified form. A wrong order from the captain or a wrong movement of the wheel when approaching a darkened fleet at thirty knots or more would spell immediate disaster. The "art of working a ship" had become a very skilled and very difficult art.

Whilst it is true that it is easier to navigate a ship that does not make an unknown amount of leeway and is, on account of her speed, not so affected by ocean currents and tidal streams, a high speed of advance demands great accuracy in pilotage waters. A very short delay in altering course, and the ship may be aground. Bringing a Dreadnought battleship into a narrow harbour and securing to buoys may look very simple, but one mistake by the captain, the quartermaster, or in the engine-room and she will be ramming another ship or heading for the shallow water. During the last war one of the finest examples of the "art of working ships" was to be seen at Rosyth, when the Battle Cruisers, completely darkened, weighed when a strong ebb was running, turned in the narrow firth and proceeded to sea in line ahead. In this "art of working a ship" the machine has certainly not lightened the tasks and responsibility of the naval officer. The echo sounding machines now give quick information, the position of the ship can be checked by wireless, chart rooms are fitted with many useful gadgets, but man cannot bring his ship into harbour, make a successful night attack, or make a successful land-fall by pressing a button.

This is equally true of every operation in a man-of-war. The machines in a ship have increased a thousandfold in the last quarter of a century and every increase has produced a demand for men of quicker minds a higher skill, and, except in the engine-rooms where the substitution of oil for coal enabled the stoker complement to be considerably reduced, an increase, not a decrease in complement. The vision of a few men pressing buttons and the machines doing everything else has faded out.

Before the First World War a Mr. Pollen invented a system of gun control that eliminated the human element except the control officers in the fighting top. It was a beautiful mechanism, and attracted considerable attention in the Russian Navy because they found it very difficult to educate their conscripts up to working range clocks, deflection calculators, gun sights and all the chain of instruments between the Gunnery officer and the guns. But though a ship equipped with such a high degree of mechanism might put up a good performance at a peacetime practice, she would probably not survive long in battle. One enemy shell could put the main armament out of action and it would remain out of action. The British Navy adopted mechanisation where mechanisation was an advantage but retained the human links in the fire control system and with every increase in range and speed a greater demand has been put on these human links. They have to be quicker, yet never lose accuracy, and, at the height of a battle, never lose their heads. If one man in the chain falters the broadside is wasted. The electrical system in a man-of-war is a marvel of invention and of harnessing invention to practical requirements, but if the man—the electrical artificer—joins up one wire wrong the guns may all depress in unison instead of elevating when the Director layer moves his lever. Loading the heavier calibre guns is entirely a task for machines. The man at the levers cannot go very far wrong as ingenious interlocking arrangements prevent the various operations occurring in the wrong order, but at the very outset of the operation a single man can put the turret out of action for a long period by lowering a shell on to a tray wrong way round, and the man who performs the last act of inserting the tube can cause delay at a critical moment in a battle if he fumbles.

A visitor looking at a modern gun and its fire control might well ask, " What is there for the man to do in action that could not be done by robots? They have to follow rigid rules; the gunlayer only has to follow a pointer." One answer is that the simplest looking operation is often the most difficult and that following that pointer with the accuracy necessary to obtain hits on an enemy ship is a task for a highly-skilled man. Another answer is that machines, however well cherished, do not always function correctly, and soon function incorrectly if disturbed by enemy shells, and it is then that the men must function and not only know what to do but do it quickly. Hesitation when a loading number sees that the charge is entering the gun wrong way round may lose a battle.

The importance of the man is even more evident at the anti-aircraft guns. It is true that loading fixed ammunition could be done by any man, provided he was strong enough to handle the ammunition with ease, but the whole complex chain of control terminates in one man—the fuze-setter. Never before have rapidity and accuracy of fire been of such vital importance as in this function of shooting down planes before they can drop their bombs and torpedoes. All the efforts of the control officer, gun layers and loading numbers are of no avail if that one man, the fuze-setter, does not remain calm and does his work with meticulous accuracy. Compare him with the man who loaded the guns before the machine age. A loading number might drop the shot, the powder monkey might fail to reach his gun, the man responsible for the priming might muddle his job, but the gun would be only one of perhaps forty guns on the broadside and the salvoes were only fired every two or three minutes; mistakes would make little difference to the outcome of the battle. But one mistake by a fuze-setter at an anti-aircraft gun might result in the loss of the ship.

The mechanical age has equipped the signalman with many devices—the masthead lamp, the searchlight for distant signalling, the shaded light for signalling in a darkened fleet—but every increase in the speed of transmission has called for higher skill on the part of the recipient. Even one letter read wrong may alter the whole course of a battle. This is equally true of the wireless staff. The inside of a modern wireless room is an amazing sight. Lamps, wires, coils in orderly profusion fill every available inch. The machines are indeed wonderful but all useless unless the men sitting with earphones on are very highly skilled. Here, again, one letter read wrong, one letter transmitted wrong, may ruin an operation. And when the ship begins to shudder under enemy fire, the men must know far more than how to send out a signal or write down an incoming signal. When the beautifully polished machines cease to function, the man must function and bring all his accumulated knowledge to the problem of restoring communications. In earlier days there was none of this urgency in communications. If a signal was not understood, the originator was asked to repeat it. Flag signals were kept at the dip if their purport was not understood. To-day, when ships are advancing into battle at high speed there is no time to ask questions. The fleet is manœuvred by wireless signals which are immediately followed by the executive signal.

At first sight it would seem that in the case of a ship's motive power it is the machine and not the man that is of first importance. In the days of sail everything depended on the man. Unless the men did their work aloft quickly and efficiently a ship might lose her masts, or in an extreme case, founder. It is true that in the early days of steam, when pressures were low, the boiler room and engine room staffs could go about their work methodically and without anxiety. But in these days of high pressures and great numbers of auxiliary engines to provide electric and hydraulic power, the man must be as alert, as cool and as efficient as his forbears—the upper yardmen. And the conditions of modern battle demand from him a far wider knowledge than how to look after the particular machine in his charge. Unless he knows exactly what to do when a shell severs a pipe or causes flooding of a compartment the ship may have to leave the battle at a critical moment, or be lost.

The old sailor will see in the foregoing some justification for his prophesy that the ship of the future would be manned by skilled mechanics and not by sailors, though he would have to admit that it was still the man and not the machine that counted most. But by a strange turn of events good seamanship, as understood by the old sailors, is in as great demand to-day as in the sailing era, and the skilled mechanics must also be skilled seamen. Before the war the sailing and pulling boats of the fleet were gradually being replaced by power boats and though the officers and coxswains of these boats required a quick eye and had to make quick decisions, they seldom had to exploit a seaman's knowledge to meet an unexpected situation. They seldom had to refer to a chart or decide whether or not to return to the ship when the weather deteriorated. They were seldom out of sight of the ship. They were rarely called on to land men on an unknown shore, or to extemporise towing arrangements, or to find their way into a strange unlit harbour. The hand-lead rarely came out of its canvas bag. The anchor remained in its stowing position for the commission. To-day there are thousands of coastal craft, landing craft and trawlers in commission and every officer and man in those craft must be a seaman. Hardly a day passes without something unexpected happening, and it is frequently a case of " all hands and the cook " when a coastal craft has been damaged in a night attack, when a landing craft is nosing into an unknown beach, when something has gone wrong with the sweeping gear. Every man in these ships must be a handy man who can be manipulating a complicated machine-gun one moment, on the forecastle working the cable the next moment, and a few minutes later lowering a boat in a tideway. Every officer must be able to navigate the ship, must be well versed in weather lore, must know the correct seaman's answer when faced, as he so often is, with an unexpected situation. These small craft are wonderful boxes of mechanical marvels, but they are of no war value unless the men who man them are both skilled manipulators of the machines and skilled seamen.

The relative importance of man and the machine in the sea warfare is even more clearly seen in the reports on battles that have taken place in this war. There have been frequent cases of man, wielding a machine of inferior power, dominating an antagonist enjoying the advantages of a superior machine, by his greater skill and greater offensive spirit.

The Admiral Graf Spee was a 10,000-ton ship with a main armament of six 11-inch guns and a secondary armament of eight 5·9-inch guns. She was protected by armour against which 6-inch gunfire could not be expected to be fully effective at long ranges. She could fire a broadside of 4,700 lbs. to the 3,136 lbs. total broadside of Commodore Harwood's three ships—the Exeter, Ajax and Achilles—and her secondary armament alone was equal to the total armament of one of the smaller British cruisers. The only material advantages possessed by the British cruisers were a six-knot greater speed and greater handiness. Despite the hazard of coming under fire from the enemy's 11-inch guns the smaller cruisers closed in rapidly so as to compel the enemy to divide his fire between them and the Exeter, but shortly after the action began the Von Spee concentrated on the Exeter and soon obtained hits. It was now the man who triumphed and, though most of the bridge personnel were killed or wounded and the wheel-house communications wrecked, the ship was brought back to her course and the action renewed, using a chain of messengers to the after steering position. The smaller cruisers meanwhile had closed to the range at which their 6-inch guns could make an impression and the action developed into a chase. The dramatic story of this long drawn-out battle, with its many vicissitudes, is a story of man, handling a weaker machine, dominating man handling a far more powerful machine, because of his greater skill, resolution and fortitude.

In the Battle of the Barents Sea, famous for the gallant action against heavy odds of the British destroyers under the command of Captain Sherbrooke, V.C., until he was wounded and then of Commander Kinloch, which resulted in a convoy arriving safely in North Russia, it was the man who triumphed despite the relative weakness of his machine. Three times an enemy cruiser, mounting an 8-inch broadside that could quickly sink a destroyer, was turned away from her purpose of attacking the convoy, by the determined action of the British destroyers. Then she came in again and though her 8-inch shells struck the Onslow, Captain Sherbrooke's ship, she was again driven off. Then another enemy cruiser and two destroyers appeared and threatened the convoy from a different direction and once again the British destroyers went in to attack. A running fight ensued with the far more powerfully armed cruiser, and before this unequal fight was over and won, still another enemy cruiser appeared and was in turn attacked. If that action had been fought on a tactical school table where relative armament can be the only basis for assessing damage, all the British destroyers would have been sunk and the convoy would never have reached its destination. But, in the actual event it was the man, not the machine, that emerged victorious from what appeared to be a hopelessly unequal struggle.

Another striking example is provided by Admiral Vian's famous defence of a convoy in the Mediterranean. The enemy came in to attack with two separate forces, one consisting of one 8-inch and three 6-inch cruisers and the other of the battleship Littorio, two 8-inch and three 6-inch cruisers. All that Admiral Vian could pit against this formidable force were three small cruisers and nine destroyers. The British machine was hopelessly outnumbered, but the occasion found the right man in control of the machine and by skilful tactics and determined attacks against heavy odds the convoy was saved.

These three examples have been chosen at random. As the war progresses examples will multiply and when the full story of the operations of the United States Navy in the Pacific is revealed there will, without doubt, be many stirring stories of American officers and men winning through against heavy " machine " odds.

The machine is seen in its most concentrated form in the submarine, and it is in the submarine that everything turns on the man and in this case one man—the captain. This is clear from the history of the German submarine campaign in the first world war. As our counter measures developed the man in the submarine began to weaken and the attack lose its force, though the efficiency of the machine increased. Commanders became prematurely aged ; the " aces," as the most successful commanders were called, sooner or later paid the price for their greater daring ; the submarines began to show a greater willingness to surrender when attacked ; many of the commanders of 1917–18 by foolishness or imprudent conduct exhibited their inefficiency.

Admiral Scheer in his book " The High Sea Fleet," wrote : " The reduction in successes was due mainly to the stronger and more perfect measures of defence taken by the enemy and also to the loss of some of the older and more experienced commanders." The same was true of the crews. When volunteers were no longer forthcoming and the crews were found from pressed men there was a quick deterioration in efficiency which was accelerated by the hastiness of the training. The interior of a submarine represents in its most elaborate form man's ingenuity in harnessing science to his needs, but all the perfectly constructed engines are soon at the bottom of the sea if the man at the periscope makes a mistake.

The more closely we examine the work of the naval rating and the naval officer in a modern man-of-war, the more evident it becomes that, though the machine on shore has reduced the demand on man's manual skill, physical strength and imagination, it has had exactly the opposite effect in the Navy, and, indeed, in the Army and Air Force for that matter. Every new machine has made a greater demand on the fighting man.

It was the man who counted for everything in the early days of maritime war, when victory could only be achieved if there were experienced men to work the ship and courageous men to board the enemy. As this second world war progresses, it becomes increasingly evident that it is still the man who counts for everything though turbine rotors drive the ship and the guns are loaded by moving a lever and powerful machines are set in motion by pressing a button.

W. M. James.

REFERENCE SECTION

DIMENSIONS AND PARTICULARS OF BRITISH AND FOREIGN WARSHIPS.

Warships are arranged in classes, except in some instances where they are arranged alphabetically. The following abbreviations are used throughout the List:—

a.g.b.	Armoured gunboat.
g.b.	Gunboat.
b.	Battleship.
b.c.	Battle cruiser.
l.cr.	Light cruiser.
c.d.s.	Coast-defence ship.
M.Cr.	Minelaying cruiser.
cr.	Cruiser.
A.A. or H.A.	Anti-aircraft guns.
A.C.	Aircraft carrier.
A.T.	Aircraft tender.
E.C.	Escort Carrier.
S.C.	Seaplane carrier.
H.N.S.	Harvey nickel steel.
H.S.	Harveyised or similar hard-faced steel.
K.S.	Krupp steel.
t.	Speed and H.P. at trials (in speed and H.P. columns).
b.p.	Length of ship between perpendiculars.
L.	Light guns under 15 cwt., including boats' guns.
M.	Machine guns.
m.p.p.	Multiple pom poms.

Torpedo Tubes: (D.) = double; (T.) = triple; (Q.) = quadruple; (sub.) = submerged; a.w. = above water.

The following abbreviations are used to distinguish the various types of boilers:—

W.T.	Water-tube boilers, where the type is not known.
A.	Ansaldo.
B.	Belleville.
Bl.	Blechynden.
B. & W.	Babcock and Wilcox.
D'A.	D'Allest.
G.	Guyot.
I.	Indret.
K.	Kanpon.
My.	Miyabara.
Nic.	Niclausse.
Pen.	Penhoet.
T.	Thornycroft.
T.S.	Thornycroft-Schulz.
W.F.	White-Forster.
Y.	Yarrow.

The following abbreviations distinguish types of machinery:—

P.T.	Parsons turbines.
C.T.	Curtis turbines.
B.C.T.	Brown-Curtis turbines.
(G.)	Geared turbines.
D.	Diesel.
Rat.	Rateau.
tur.	Turbines, where the type is not known.
R.	Steam reciprocating engines.
I.C.	Internal combustion engines.
W.G.T.	Westinghouse geared turbines.

In later pages (marked P1, P2, etc., towards the end of the volume) plans of most of the ships appear.

Unless otherwise stated, the displacements are Standard displacements (*i.e.* deep less fuel and reserve feed water).

GREAT BRITAIN.—Battleships and Battle Cruiser.

Class	NAME	Standard Displacement.	Length. (Extreme.)	Beam. (Extreme.)	Normal Draught.	Horse-Power. Type of Boilers.	Where Built.	Makers of Engines. Type of Machinery.	Date of Launch.	Date of Completion.	Cost.	Armour.						Armament.		Speed.	Complement (War).
												Belt.	Deck.	Side above Belt.	Bulkhead.	Gun Position. Heavy Guns.	Gun Position. Second-ary.	Guns.	Torpedo Tubes.		
		tons.	ft.	ft. ins.	ft. ins.						£	in.	in.	in.	in.	in.	in.			knots	
b. b.	1 Battleship 1 Battleship	40,000					J. Brown Fairfield	J. Brown Fairfield	Bdg.									9 *16-in.* guns.			
b.	Lion . .	40,000	789		30 0		Vickers (Walker)	Vickers (Walker)	Bdg.												
b.	Temeraire .						Cammell Laird	Cammell Laird	Bdg.												
b.	King George V.	35,000	745	103 0	28 0		Vickers (Walker)	Vickers (Barrow) (G.)	1939	1941								10 *14-in.*, 16 *5·25-in.*; 6 m.p.p.; 4 aircraft; catapult.	Nil		1500
b.	Duke of York						J. Brown	J. Brown (G.)	1939	1941											
b.	Howe . .						Fairfield	Fairfield (G.)		1942											
b.	Anson . .						Swan Hunter	Wallsend (G.)		1942											
b.	Nelson . .	33,950	710	106 0	30 0	45,000	N'wc'stle-on-Tyne	Wallsend B.C.T.(G.)	1925	1927	6,410,071	14	6¼	..	..	16–9	..	9 *16-in.*, 12 *6-in.*, 6 *4·7-in.* A.A.; 6 *2-pr.* mult. p.p.; 5 M.; 11 L.; 2 *2-pr.* Pom Poms in Nelson.	2 (sub.) 24″	23	1360
b.	Rodney . .	33,950		106 1			Birkenh'd	Cammell Laird B.C.T.(G.)	1925	1927	6,148,319										1315
b.	Ramillies .	29,150	620½	‡102 0	29 0	40,000 Y.	Dalmuir .	Beard-more, P.T	1916	1917	3,295,810	13–4	4–1	6	6–4	11	6	8 *15-in.*, 12 *6-in.*, 4 *3-pr.*, 2 *2-pr.* m.p.p.; 8 *4-in.* A.A.; 5 M.; 11 L. Resolution has a catapult on X turret and carries 1 aircraft.	2 (sub.) 21″	23‖	1010
b.	Resolution .		620¼	‡101 4			Jarrow .	Palmer . P.T.	1915	1916	2,449,680										1012
b.	Revenge .		625¾	‡101 5			Barrow .	Vickers . P.T.	1915	1916	2,406,368										1104
b	Royal Sovereign		620¾	‡101 6			Portsm'th	Parsons . P.T.	1915	1916	2,570,504										

b.	**Malaya**¶ .	31,100	640¾	104 0	31 8	75,000 B. & W.	Walker .	Wallsend . P.T.	1915	1916	2,945.709	13–6	3·1	6	4–2	11	6	8 *15-in.*, 12 *6-in.*, 8 *4-in.* A.A., 4 *3-pr.*, 2 *2 pr.* m.p.p.; 5 M.; 11 L.; 1 catapult, 1 aircraft.		25‖	1136
b.	**Valiant** .	31,100	639¾	104 ‡ 0	31 3	75,000 B. & W.	Govan .	Fairfield . B.C.T.	1914	1916	2,537,037	13–6	3–1	6	4–2	11	6	8 *15-in.*, 8 *6-in.*, 4 *3-pr.*, 4 *4-in.* A.A.; 2 *2-pr* m.p.p.; 4 M.; 11 L.; 1 catapult, 1 aircraft.		25‖	1136
b.	**Queen Elizabeth**	31,100	644¾	‡104 0	31 8	75,000 B. & W.	Portsm'th	Wallsend . P.T.	1913	1915	2,473,108	13–4	3–1	6	4–2	11	6	8 *15-in.*, 8 *6-in.*, 4 *2-pr.*, m.p.p.; 8 *4-in.* A.A.; 5 M.; 11 L.		25‖	1187
b.	**Warspite** .	30,600	644½	104 ‡ 0	28 2	75,000 Y.	Devonp'rt	Hawthorn P.T.	1913	1915	2,518,360	13–6	3–1	6	4–2	11	6	8 *15-in.*, 8 *6-in.*, 4 *2-pr.* m.p.p.; 8 *4-in.* A.A.; 5 M.; 11 L.; 1 catapult, 1 aircraft.	(sub.) 21″	25‖	1130
b.c.	**Renown*** .	32,000	794¼	102 4	31 0	120,000	Govan .	Fairfield . B.C.T.	1916	1916	3,117,204	9–8 K.C.	2	6–3	4–3	11–7 K.C.	6 K.C.	6 *15-in.*; 20–*4·5-in.* A.A.. 5 M.; 11 L.; catapult and 4 aircraft.	2† (sub.) 21″	31·5‖	1188

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* Renown modernised (1939), including re-engining.
¶ Built at the charge of the Federated Malay States.
‖ Speed without bulges.
‡ Over rubbers.

GREAT BRITAIN.—Aircraft Carriers.

Class.	NAME.	Standard Displacement.	Length. (Extreme.)	Extreme breadth under water over rubbers.	Draught.	Horse-Power. Type of Boiler.	Where Built.	Maker of Engines. Type of Machinery.	Date of Launch.	Date of Completion.	Cost.	Armour.		Armament.		Speed.	Complement (War).
												Belt. Deck.	Gun Position.	Guns.	Torpedo Tubes.		
		tons.	ft.	ft. ins.	ft. ins						£	in.	in.			knots.	
A.C. .	Indefatigable	23,000	760	95 9	22 4	140,000	J. Brown	J. Brown	Bldg.					*4·5-in.* guns		32	
A.C. .	Implacable						Fairfield	Fairfield	Bldg.								
A.C. .	Illustrious	23,000	740	95 9	22 4	111,000	Vickers (Barrow)	Vickers (Barrow)	1939	1940				16 *4·5-in.* guns; 20 smaller		30½	
A.C. .	Victorious						Vickers (Walker)	Wallsend	1939	1941							
A.C. .	Formidable						Harland & Wolff (Belfast)	Harland & Wolff	1939	1940							
A.C. .	Indomitable						Vickers (Barrow)	Vickers	1940								
A.C. .	Argus . .	14,000	567	75 9	21 0	20,000	Dalmuir .	Beardmore P.T.	1917	1918	Purchased under construction	..	..	4 *3-pr.*, 4 M., 10 L.. accommodates 20 aircraft	—	20·2	420

A.C.	**Furious**	22,450	786¼	90§	1	21	6	90,000 Y.	Walker (Armstrong)	Wallsend Engn'g Co. B.C.T.(G.)	1916 As a cruiser.	1925 As an aircraft carrier.	2,436,603(*a*)	8 —	7	12 *4-in.* A.A., 4 *2-pr.*, m.p.p.; 46 smaller, 33 aircraft	—	31	728
S.C.	**Pegasus** * (*ex*-Ark Royal)	6900	366	50	10	17	6	3000	Blyth	Blyth S. B. Co.	1914	1914	Purchased under construction	..	..	4 M., 10 L., 1 catapult	—	11	189
S.C.	**Albatross** ¶	4800	443¾	61	0	15	6	12,000 P.T. (*a*)	Cockatoo Island	recip. Sydney	1928	1929	266,796	..	..	4 *4·7-in.* A.A, 4 *2-pr.* Pom Poms, 4 *3-pr.*, 4 M.; 20 L.; 9 seaplanes	—	21	350
E.C.†	**Biter**	..	..	..		..		..	..	..	1942	1942–3							
E.C.†	**Archer**																		
E.C.†	**Fencer**																		
E.C.†	**Battler**																		
E.C.†	**Tracker**																		
E.C.†	**Ravager**																		
E.C.†	**Searcher**																		
E.C.†	**Pursuer**																		

* Used for experimental work.

† Built or converted from fast merchant ships and tankers.

(*a*) First cost of ship as a cruiser.

§ Over rubbers; 120 ft. over pallisades.

¶ Transferred from Royal Australian Navy.

GREAT BRITAIN.—Cruisers.

Class.	NAME.	Standard Displacement.	Length. (Extreme.)	Beam. (Extreme.)	Draught.	Horse-Power. Type of Machinery and Boilers.	Where Built.	Maker of Engines.	Date of Launch.	Date of Completion.	Cost.	Armour. Belt. Deck.	Armour. Gun Position.	Armament. Guns.	Armament. Torpedo Tubes.	Speed.	Complement (War).
		tons.	ft.	ft. ins.	ft. ins.						£	in.	in.			knots.	
Norfolk Class	**Norfolk** . .	9925	633	66 0	17 0	80,000 (G.)	Fairfield	Fairfield .	1928	1930	2,141,961	..	..	8 *8-in.*, 8 *4-in.* A.A., 4 *3-pr.*, 2 *2-pr.* Pom Poms, 2 M., 10 L., 1 aircraft, 1 catapult.	8 21″ (Q.)	32¼	685
London Class	**Sussex** . .	9830	633	66 0	17 0	80,000 (G.)	Hawthorn Leslie	Hawthorn Leslie	1928	1929	1,975,800†	..	..	8 *8-in.*, 8 *4-in.* A.A., 4 *3-pr.*, 4 M., 10 L., 1 aircraft, 1 catapult.	8 21″ a.w. (Q.)	32¼	685
	Devonshire .	9850	630	66 0	17 0		Devonp'rt	Vickers .	1927	1929	2,007,275	..	..				
	London . .	9850	630	66 0	17 0		Portsmouth	Fairfield .	1927	1929	1,966,559	..	..				
Kent Class	**Suffolk** .	10,000	630	68 4	16 7	80,000 (G.) Y.	Portsmouth	Parsons .	1926	1928	2,180,240†	..	..	8 *8-in.*, 8 *4-in.* A.A., 4 *3-pr.*, 4 *2-pr.* Pom Poms, 4 M., 8 L., 3 aircraft Cumberland and Suffolk, 6 *4-in.* A.A., Kent, 1 aircraft.	Nil	31½	700
	Berwick .						Govan .	Fairfield .	1926	1928	2,029,526	..	..				
	Cumberland .						Barrow .	Vickers .	1926	1928	2,960,821*	..	..				
	Kent . .						Chatham	Hawthorn	1926	1928	2,084,213†	..	..				
Improved Southampton Class	**Belfast** . .	10,000	613½	63 4	17 3	80,000 G.T.	Harland & Wolff	Harland & Wolff	1938	1939	2,176,781‡	..	..	12 *6-in.*, 12 *4-in.* A.A., 20 smaller, 3 aircraft, 1 catapult.	6 21″	32½	..

South-ampton Class	**Liverpool**	9400	591½	62 4	17 5	82,500 T.G.	Fairfield	Fairfield	1937	1938		..	..	12 *6-in.*, 8 *4-in.* A.A., 20 smaller, 1 catapult, 3 aircraft	6 21″	32	740
	Newcastle	9100	591½	61 8	17 0	75,000 T.G.	Vickers (Walker)	Vickers	1936	1937	1,960,000‡ each	..	..				
	Glasgow						Scotts	Scotts									
	Sheffield						Vickers (Walker)	Vickers									
	Birmingham						Devonp'rt	J. Brown									
Fiji Class	**Ceylon**	8000	555½	62 0	16 6	72,500 T.G.	Stephen	Stephen	..	..	..	..	..	12 *6-in.* 8 *4-in.* A.A. 1 catapult. 3 aircraft.			
	Jamaica						Vickers (Walker)	Vickers									
	Gambia §						Swan Hunter	Wallsend									
	Uganda						Vickers (Barrow)	Vickers									
	Kenya						A. Stephen	Stephen	1939	1940							
	Mauritius						Swan Hunter	Wallsend	1939	1941							
	Nigeria						Vickers (Walker)	Parsons	1939	1940	..						
	Newfoundland											..	..				
Arethusa Class	**Aurora**	5270	506	51 0	13 10	64,000 T.G.	Ports-mouth	Wallsend	1936	1937	1,233,921‡	..	..	6 *6-in.*, 4 *4-in.* A.A., 9 smaller, 1 catapult, 1 aircraft. 4 *4-in.* twin mounting in Aurora and Penelope	6 21″	32¼	500
	Penelope						Harland & Wolff	Harland & Wolff	1935	1936	1,263,169‡						
	Arethusa	5220					Chatham	Parsons	1934	1935	1,280,463‡	..	..				
Leander Class	**Ajax**	6985	554½	55 8	16 0	72,000 P.T. (G.)	Vickers	Vickers	1934	1935	1,491,417‡	..	..	8 *6-in.*, 8 *4-in.* A.A., 4 *3-pr.*, 5 M.G., 2 seaplanes, 1 catapult.	8 21″	32½	570
	Orion	7215					Devonp'rt	Vickers	1932	1934	1,548,663‡	..	..				

* Total estimated cost of ship, including guns.
§ Lent to Royal New Zealand Navy.

† Estimated cost, excluding armament and ordnance stores.

‡ Total estimated cost including guns and aircraft.

GREAT BRITAIN.—Cruisers, &c.—*continued.*

Class.	NAME.	Standard Displacement.	Length. (Extreme.)	Beam. (Extreme.)	Draught.	Horse-Power. Type of Machinery and Boilers.	Where Built.	Maker of Engines	Date of Launch.	Date of Completion.	Cost.	Armour. Belt.	Armour. Deck.	Armour. Gun Position.	Armament. Guns.	Armament. Torpedo Tubes.	Speed.	Complement (War).
		tons.	ft.	ft. ins.	ft. ins.						£	in.		in.			knots.	
E Class	Emerald .	7550	570	54 7	16 8	80,000 B.C. (G.) Y.	Armstrong	Wallsend .	1920	1926	1,617,120	3–1½	1	..	7 *6-in.*, 3 *4-in.* A.A., 4 *3-pr.*, 2 *2-pr.* Pom Poms, 2 M., 8 L., 1 aircraft.	8 21″	30	577
	Enterprise .	7580		54 9			J. Brown	J. Brown .	1919	1926	1,690,658*			..				
D Class	Diomede .	4850	471¼–472¾	46 3–46 9	14 3	40,000 (G.) Y.	Vickers .	Vickers .	1919	1922	1,146,904	3	—	Shields	6 *6-in.*, 3 *4-in.* A.A., 2 M., 4 *3-pr.*, 8 L., 2 *2-pr.* Pom Poms.	12 21″	29	460
	Despatch .						Fairfield	Fairfield .	1919	1922	1,016,870							
	Durban . .						Scotts .	Scotts .	1919	1921	954,667							
	Delhi . .						Armstrong	Wallsend .	1918	1919	785,145							
	Danaë . .						Armstrong	Wallsend .	1918	1918	701,600							
	Dauntless .						Palmers .	Palmers .	1918	1918	750,025							
Hawkins Class	Frobisher .	9860	605	65 1	17 3	65,000	Devonport .	Wallsend	1920	1924	2,035,915†	3	—	Shields	5 *4-in.* H.A., 4 *3-pr.*, 2 *2-pr.*, 2 M., 8 L.	4 21″	30½	715
	Hawkins .	9800		65 1		55,000 (G.) Y.	Chatham .	Parsons .	1917	1919	1,599,741						29½	747
Carlisle Class	Capetown § .	4200	451¾	43 10	14 1	40,000 (G.) Y.	Cammell Laird	Cammell Laird	1919	1922	984,720	3	—	..	5 *6-in.*, 2 *3-in*, A.A., 4 *3-pr.*, 2 *2-pr.* Pom Poms, 2 M., 8 L.	8 21″	29	415
	Colombo § .						Fairfield .	Fairfield .	1918	1919	692,308							
	Carlisle ‖ .						Fairfield .	Fairfield .	1918	1918	669,216				8 *4-in.* A A., 1 *2-pr.* m.p.p.			

Ceres Class	**Cardiff** . .	4290	450 –450⅓	43	9	14	1	40,000 (G.) Y.	Fairfield	Fairfield .	1917	1917	542,507	3 —	..	5 *6-in.*, 2 *3-in.* A.A., 4 *3-pr.*, 2 *2-pr.* Pom Poms; 2 M., 8 L.	8 21″	29	430
	Ceres . .								J. Brown	J. Brown .	1917	1917	529,248						
	Curacoa ‖ .								Beardmore	Harland & Wolff	1917	1918	794,201			8 *4-in.* A.A., 1 m.p.p., 2 M.G., 8 Lewis.			
Caledon Class	**Caledon** .	4180	450 –450⅓	43	1	14	1	40,000 P.T. (G.) Y.	Cammell Laird	Cammell Laird	1916	1917	547,300	3 —	..	5 *6-in.*, 2 *3-in.* A.A., 4 *3-pr.*, 2 *2-pr.* Pom Poms, 2 M., 8 L.	8 21″	29	420
	Caradoc .								Scotts .	Scotts .	1916	1917	534,583						
Leander Class	**Achilles** .	7030	554½	55	8	16	0	72,000	Cammell Laird	Cammell Laird	1932	1933	..	..	..	8 *6-in.*, 4 *4-in.* A.A., (Leander, 8 *4-in.* A.A.), 1 aircraft	8 21″	32½	570
	Leander .	7270		55	2				Devonp'rt	Vickers .	1931	1933	1,667,819						
Dido Class	**Cleopatra** . .	5450	506	..		..		62,000 T.G.	Hawthorn	Hawthorn						10 *5·25-in.*, 1 catapult, 1 aircraft. 16 smaller guns.	6 21″	33 .	
	Scylla . .								Scotts .	Scotts .		1940							
	Dido . .								Cammell Laird	Cammell Laird	1939	1940	..	..	..				
	Euryalus .								Chatham	Hawthorn	1939	1941							
	Phœbe . .								Fairfield .	Fairfield .	1939	1940							
	Sirius . .								Ports-mouth	Scotts .	..	1940	..	..	..				
	Argonaut .								..	..	..	..							
Hawkins Class	**Vindictive** ‡ .	9100	605	65	2	17	3	25,000 P.T.	Harland & Wolff	Harland & Wolff	1918	1918	1,671,712	3 —	Shields	2 *4·7-in.*, 4 *3-pr.*, 1 *2-pr.* Pom Poms, 2 M., 8 L.	..	20	720
M. Cr. Class	**Adventure** .	6740	539	59	0	14	5	40,000 Tur. & Diesel	Devonport .	Vickers .	1924	1927	1,246,083	..	..	4 *4·7-in.* A.A., 4 *3-pr.*, 4 *2-pr.* Pom Poms, 4 M., 8 L., 310 mines	..	28	700

* Total estimated cost of ship, including guns.

‡ Vindictive is demilitarised and employed as a cadets' training ship.

‖ Anti-aircraft ship.

§ Being converted to anti-aircraft ship.

GREAT BRITAIN.—Miscellaneous Craft.

GUNNERY DRILL SHIP (ex-Monitor).—Marshal Soult (1915), 6,400 tons, 2 15-in. guns, 2 3-in. H.A. guns.

DESTROYER DEPOT SHIPS.—Greenwich (1916), 8,100 tons, 2 4-in. guns, 2 3-in. A.A.; Woolwich (1935), 8,750 tons, 15 knots, 4 4-in. A.A. Tyne (1941), 11,000 tons, 8 4·5-in A.A., 2 2-pr. m.p.p., 7,500 S.H.P., 17 knots.

SUBMARINE DEPOT SHIPS.—Lucia, 5,800 tons; Titania, 5,250 tons, 14·5 knots; Alecto, 935 tons; Cyclops, 11,300 tons, 13 knots; Maidstone (1938) and Forth (1939), 8,900 tons, 17 knots, 8 4·5-in., 4 3-pr.; Adamant, 12,500 tons, 17 knots, 8 4·5-in.

REPAIR SHIP.—Resource (Vickers', 1930), 12,300 tons, 15 knots, armament 4 4-in. A.A.

MINELAYERS (ex-Monitors), 1915.—Melpomene, Minerva, 355 tons, 10 knots, 52 mines; (ex trawlers) Linnet, 489 tons, 10½ knots; Plover, 805 tons, 14¾ knots.; Redstart (as Linnet). Manxman, (1941), 2,650 tons, 40 knots, 6 4-in.

SURVEYING VESSELS.—Endeavour, 1,280 tons, 13 knots, 1 3-pr.; Challenger, 1,140 tons, 1,200 H.P. (recip.), 12½ knots; Franklin, 830 tons, 17 knots, 1 3-pr.; Scott (1939), 815 tons, 17 knots, 1 12-pr. A.A.

NON-MAGNETIC SURVEY VESSEL.—Research, building by Philip at Dartmouth. Sailing vessel. Aux. motor, 160 B.H.P., 770 tons, 6½ knots.

NETLAYER AND TARGET TOWING VESSELS.—Guardian (Chatham, 1931–3), 2,860 tons, 6,500 H.P., 18 knots, 2 4-in. A.A. Protector (1934 programme), 2,900 tons, 20 knots, 1 4-in.

MINING SCHOOL (VERNON) TENDER.—Nightingale (Portsmouth, 1931), Vernon (Portsmouth, 1932), displacement 275 tons, horse-power 400, speed 10 knots, coal capacity 15 tons.

BOOM DEFENCE VESSELS.—Bownet, Burgonet, Dragonet, Falconet, Magnet, Martinet, Planet, Plantagenet, Signet, Sonnet, 850 I.H.P., 1 3-in. Barbarian, Barbette. Barbican, Barbrook, Barcastle, Barcombe, Barcroft, Barnehurst, Barfair, Barfield, Barlane, Barlight, Barlow, Barmouth, Barrage, Barranca, Barricade, Barrier. 730 tons, 850 I.H,P., 11¾ knots, 1 3-in. Dunnet 350 tons, 350 I.H.P., 10 knots, 1 3-in. Jennet, Punnet, Rennet, Quannet, Moorgate, 345 tons, 1 3-in. Aldgate, Bishopsgate, Dowgate, Ludgate, Watergate, 290 tons, 1 3-in. (these vessels are not self-propelled). Coronet, Barnet, 429 tons, 10½ knots, 1 3-in.

TENDERS.—(For Submarine depôt, Portland), Elfin (1933), 222 tons, 250 H.P., 9½ knots. (For Torpedo School) Redwing (1933), 225 tons, 250 H.P., 9½ knots.

GUNNERY TRAINING SHIP.—Battleship Iron Duke was de-militarised under the London Treaty and converted to a Gunnery Training Ship (1931–32).

FLEET TARGET SHIP.—Centurion (ex-battleship), 25,500 tons.

TRAWLERS.—Basset (1935), 460 tons, 1 4-in. gun; Blackwater, Foyle and Boyne (War built), 400–500 tons; Lilac, Laurel, Holly, Hawthorn, Cedar, Cypress, Sycamore, Syringa, Magnolia, Willow, 570–600 tons, 1 4-in. gun; Turquoise, Topaze, Sapphire, Cornelian, Pearl, Ruby, purchased in 1935, 580–640 tons, 1 4-in. gun. Colne, Doon, Dee, Garry, Kennet, Liffey, 10½ knots, 1 12-pr. Redwood, Oak, Maple, Larch, Hornbeam, Berberis, Acacia, Bay, Birch, Blackthorn, Deodar, Elm, Fir, Olive, Mangrove, Pine, Rowan, Walnut, Whitethorn, Wistaria, 500–600 tons. Arctic Ranger, Bengali, Brontes, Cambridgeshire, Cape Argona, Cape Cormorin, Daneman, Davy, Derby County, Drangey, Huddersfield Town, Istria, Kelt, Kingston, Andalusite, Kingston Chrysolite, Kingston Olivine, Kirkella, Lady Beryll, Lady Elsa, Leeds United, Leyland, Loch Melfort, Loch Tulla, Lord Hotham, Lord Lloyd, Lord Plender, Lord Wakefield, Man o' War, Pict, Regal, Saon, Sindonis, Spurs, Stafnes, Thornwick Bay, Turcoman, Vascama, Victorian, Wellard, York City. 4 in No. Trawlers building in Portugal. Lady Shirley (1937), 472 tons, 1 4-in., 2 M. Cayrian, Fluellen, Arctic Hunter, Asama, Earl Kitchener, Emerald, Fitzgerald, Gwenllian, Reboundo, Rolls-Royce, St. Melanté, Sea Holly, Staunch, Stella Rigel, Sweet Promise, William Stephens.

CABLE VESSELS.—Lasso, 910 tons, 1,100 I.H.P., 13 knots; Kilmun, 700 I.H.P., 10 knots.

MOTOR TORPEDO BOATS.—Nos. 6–12 and 14–18, 60 ft. long. 18 tons, 1,500 B.H.P., 35 knots, 8 small guns, 2 torpedoes. M.T.B. No. 22 70 ft., 32 tons, 3,650 B.H.P., 40 knots, 2 torpedoes. No. 100 (ex-M.M.S. 51). M.T.B. 101, 67 ft., 22 tons, 2 torpedoes. M.T.B. 102, 68 ft., 28 tons, 3,000 B.H.P., 44–48 knots, 2 21-in. torpedoes. Many others.

MOTOR GUN BOATS.—Number unknown. MOTOR ANTI-SUBMARINE BOATS.—Number unknown. STEAM GUN BOATS.—Number unknown.

MOTOR LAUNCHES.—Number unknown. MOTOR MINESWEEPERS.—Nos. 1 and 2, 52 tons, 1,500 H.P., 15 knots.

AUXILIARIES.—Tugs, Drifters, Mooring lighters, etc. MONITORS.—Erebus 7,200 tons, 12 knots, 2 15-in., 8 4-in., 2 3-in. A.A 12 smaller guns. Roberts, Abercrombie.

FLEET AIR ARM SUPPLY AND DEPOT SHIP.—Unicorn 14,500 tons, 40,000 S.H.P., 24 knots. HOSPITAL SHIPS.—Dinard, St. Julien, Maine, 10,100 tons.

STORE SHIPS.—Robert Dundas, Robert Middleton, Bacchus, Reliant. ARMED MERCHANT VESSELS.—Number unknown. WHALERS.—

OIL TANKERS.—Abbeydale, Aldersdale, Arndale, Bishop Dale, Boardale, Cedardale (1937–39), 11,500 tons D.W., 11½ knots. Olcades, Oligarch Olwen and Olynthus, 9,000 tons D.W., 10½ knots. War Afridi, War Bharaya, War Brahmin, War Diwan, War Hindoo, War Krishna, War Nawab, War Nizam, War Pathan, War Pindari, War Sudra, 7,000 tons D.W., 11 knots. Appleleaf, Brambleleaf, Cherryleaf, Orangeleaf, Pearleaf, Plumleaf (1917), 5,000 tons D.W., 15 knots. Belgol, Celerol, Mixol, Montenol, Prestol, Rapidol, Serbol, Thermol (1917), 2,000 tons D.W., 13½ knots; Boxol, Distol, Elderol, Elmol, Hukorol, Kimmerol, Lorihol, Limol, Philol, Scotol, Viscol (1917), 1,000 tons D.W., 9 knots.

For destroyers, submarines, sloops, corvettes, minesweepers and river gunboats, see Flotilla tables.

Defence Forces of the Dominions.

ROYAL AUSTRALIAN NAVY.

Under Control of the Australian Naval Board.

Class.	NAME.	Standard Displacement.	Length. (Extreme.)	Beam. (Extreme.)		Draught.		Horse-Power. Type of Machinery and Boilers.	Where Built.	Maker of Engines.	Date of Launch.	Date of Completion.	Cost.	Armour. Belt. Deck.	Armour. Gun Position.	Armament. Guns.	Armament. Torpedo Tubes.	Speed.	Complement (War).
		tons.	ft.	ft.	in.	ft.	in.						£	in.	in.			knots	
Kent Class	**Australia**	9870	630	68	4	16	3	80,000 B.C. (G.) Y.	Brown	Brown	1927	1928	..	..	..	8 *8-in.*, 8 *4-in.* A A., 4 *3-pr.*, 4 *2-pr.* m.p.p., 4 M., 12 L., 1 aircraft, 1 catapult.	8 21″ a.w. (Q.)	31½	685
London Class	**Shropshire**	9830	633	66	0	17	0		Dalmuir	Beardmore	1928	1929	1,941,950†	..	..			32¼	685
Modified Leander Class	**Hobart** (late Apollo)	7000	562	56	8	15	8	72,000 P.T. (G.)	Devonport	Beardmore	1934	1936	1,459,117*	..	..	8 *6-in.*, 8 *4-in.* A A., 18 smaller, 1 catapult, 2 aircraft	8 21″	32½	590
Adelaide Type Cruiser	**Adelaide**	5100	462½	50	1	15	10	25,000 P.T. Y.	Sydney	Sydney	1918	1922	..	3 —	..	8 *6-in.*, 3 *4-in.* A.A., 4 *3-pr.*, 8 L., 2 M.	2 (sub.) 21″	25·5	450
Flotilla Leader	**Stuart**	1530	332½	31	9	12	3	40,000	Hebburn	Hawthorn Leslie	1918	1918	—	—	—	5 *4·7-in.*, 1 *3-in.* A.A., 7 M. & L.	6	36½	182
Tribal Class Destroyers	**Arunta** **Warramunga** and 6 others	1870	..	36	6	..		..	..	..	..	1942	500,000 approx.	..	..	8 4.7-*in.*, 7 smaller	4 21″	36½	200

DESTROYER.—" *V* " *Class* :—Vendetta. Completed, 1917–18; Displacement, 1,090 tons; 27,000 H.P.; speed, 34 knots; armament, four 4-in.; 6 smaller guns, 6 torpedo tubes. Napier, Nizam, Norman, Norseman, Quiberon, Quickmatch, 6 4·7-in.

SLOOPS.—Warrego (1940), 1060 tons, 2000 H.P. (T.G.), 16½ knots, 3 4-in., 4 3-pr., and Swan (1936).

SURVEYING VESSEL.—Moresby (late Silvio) (1918), 1650 tons, length 267½ ft., 2,500 H.P., 15 knots, one 3-pr.

DEPOT AND FLEET REPAIR SHIP.—Penguin (late Platypus) (J. Brown, Clydebank, 1917). Displacement 3455 tons, 14 knots, 1 4-in.

BOOM DEFENCE VESSELS.—Kookaburra, 523 tons, 9½ knots, 1 12-pr. A.A. Koala, Kangaroo (1940), 770 tons, 1 12-pr.

MINESWEEPERS.—50 in number, including Bendigo, Lithgow, Maryborough, Rockhampton, Tamworth, Townsville, Ballarat, Bathurst, Lismore.

* Total cost, including guns and aircraft.

† Estimated cost, excluding armament and ordnance stores.

ROYAL NEW ZEALAND NAVY.

Cruisers Achilles and Leander (for details see **Great Britain**—**Cruisers**—Leander Class).
Gambia (,, ,, ,, ,, Fiji ,,
Sloops.—Leith and Wellington. **Surveying Vessel**—Endeavour.
Training and Depot Ship.—Philomel (2570 tons); 1 6-in., 1 4-in. 2 12-pdr. **Trawler.**—Wakakura.
Minesweeping Trawlers.—Kiwi, Tui, Inchkeith, Killegray, Sanda, Scarba.

ROYAL CANADIAN NAVY.

Under control of the Canadian Department of National Defence.

Destroyers.—St. Laurent (ex-Cygnet, Vickers, 1932), Restigouche (ex-Comet, Portsmouth 1931), 1375 tons, 36 knots, 36,000 S.H.P., 4 4·7-in., 7 smaller, 2 quadruple 21-in. torpedo tubes. Saguenay and Skeena (Thornycroft, 1931), 1337 tons, 32,000 S.H.P., 35 knots, 4 4·7-in., 2 2-pdr., 2 quadruple 21-in. torpedo tubes; Assiniboine (ex-Kempenfelt, J. S. White, 1937), 1390 tons, 36,000 S.H.P., 35·5 knots, 4 4·7-in., 2 2-pdr., 8 21-in. torpedo tubes. Kootenay (ex-Decoy, Thornycroft, 1933), 1375 tons, 36,000 S.H.P., 36 knots, 4 4·7-in., 1 4-in., 1 3-in. A.A., 7 smaller, 4 21-in. torpedo tubes; Gatineau (ex-Express, Swan Hunter, 1934), 1375 tons, 36,000 S.H.P., 36 knots, Saskatchewan (ex-Fortune, Brown, 1935), 1350 tons, 36,000 S.H.P., 36 knots, Qu'appelle (ex-Foxhound, Brown, 1935), 1350 tons, 36,000 S.H.P., 36 knots, Ottawa (ex-Griffin, Vickers, 1936), 1335 tons, 34,000 S.H.P., 36 knots, 4 4·7-in., 1 4-in., 2·5-in. m.g., 5 smaller, 4 21-in. torpedo tubes; Chaudière (ex-Hero, Vickers, 1936), 1340 tons, 34,000 S.H.P., 36 knots, 4 4·7-in., 1 4-in., 7 smaller, 4 21-in. torpedo tubes. Ex-U.S.N. Town Class: St. Croix and St. Francis (1919), 1190 tons, 35 knots, 4 4-in., 1 3-in., 12 21-in. torpedo tubes; Hamilton, Niagara, Columbia, Annapolis and St. Clair (1918–1920), 1060 tons, 35 knots, 4 4-in., 1 3-in., 12 21-in. torpedo tubes. 6 Tribal Class, building in Canada, 1870 tons, 36·5 knots, 8 4·7-in., 7 smaller, 4 21-in. torpedo tubes.

Motor Torpedo Boats.—15 in number, 70-ft. long, 4,350 B.H.P.

Corvettes.. *etc.*, 80 *in No.*, *Town Class.*—Agassiz, Alberni, Algoma, Amherst, Avida, Baddock, Banff, Barrie, Battleford, Brandon, Buctache, Calgary, Camrose, Carlton, Chambly, Charlottetown, Chicoutimi, Chilliwack, Cobalt, Collingwood, Dauphin, Dawson, Drumblair, Drumheller, Dunvegan, Edmundston, Fort York, Fredericton, Galt, Kamloops, Kendgami, Lethbridge, Louisberg, Lunenberg, La Mabaie, Matapedia, Moncton, Moose Jaw, Morden, Nanaima, Napanee, Oakville, Orillia, Pas, Pictou, Prescott, Quesnel, Regina, Rimouski, Rosthern, Sackville, Saskatoon, Shawinigan, Shediac, Sherbrooke, Sorel, Sudbury, Summerside, Trial, Vancouver, Wetaskiwin, Weyburn (1940–41), 1 4-in. gun.

Minesweepers.—Bellechasse, Brockville, Chisdabulto, Chignecto, Clayoquot, Cowichan, Esquimalt, Esqeranza, Georgian, Ingonish, Mahone, Malpeque, Minas, Miranmchi, Nipigon, Outarde, Qualicum, Quatsind, Quinte, St. Ann, Tadoussac, Thunder, Transcona, Trois, Rivieres, Ungava, Wasaga, Westport, etc., 60 in No., 12 in No. special type.

Patrol Vessels.—24 building.

Minesweeping Trawlers.—Armentières (1918), 360 tons, 10 knots; Comox, Nanoose, Gaspe and Fundy (1938), 668 tons, 12½ knots, 1 4-in.

Armed Merchant Cruisers.—3 in number. Motor Patrol Boats.

SOUTH AFRICA.

[A number of M.T.Bs., Minesweepers and other small craft.]

ROYAL INDIAN NAVY.

Minesweeping Sloops.—Hindustan (1930), 1,190 tons; 2,000 H.P.; 16¼ knots; 2 4-in., 4 3-pdr., 10 smaller guns. Clive, 1920, 2,021 tons; 1,700 H.P.; 14½ knots; 2 4-in. 2 2-pdr., 4 3-pdr. guns. Lawrence, 1919, 1,259 tons; 1,900 H.P.; 15 knots; 2 4-in., 4 3-pdr., 2 2-pdr. guns.

Sloops.—Cornwallis (1917), 1,345 tons; 17 knots; 2,500 H.P.; 3 4-in., 2 2-pdr., 4 3-pdr. guns. Narbada, Godavari, Jumna, Sutlej.

Surveying Ship.—Investigator (1907), 1,172 tons; 1,137 H.P.; 13 knots; no guns.

Trawlers.—Madras, Travancore, Baroda, Amritsar, Lahore. Minesweepers.—Orissa, Rajputana, Bengal.

ARGENTINE REPUBLIC.

Class.	NAME.	Standard Displacement.	Length. (Extreme.)	Beam.	Draught.	Horse-Power. Type of Machinery and Boilers.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.						Armament.		Speed.	Fuel. Oil.	Complement.
											Belt.	Deck.	Side above Belt.	Bulkhead.	Gun Position. Heavy Guns.	Gun Position. Secondary.	Guns.	Torpedo Tubes.			
		tons.	ft.	ft.	ft.					£	in.	in.	in.	in.	in.	in.			knots.	tons.	
c.	**La Argentina** .	6500	535	56	16	54,000 P.T. (G.) Y.	Vickers, Barrow	1937	1938	1,750,000 approx.	8	3	..	..	..	..	9 *6-in.*, 4 *4-in.* A.A., 2 *3-in.*, 25 A.A. M.G., 1 catapult, 2 aircraft.	6 21″	30	1000	556 +60 Cdts.
c.	**Almirante Brown**	6495	545¾	58	16¼	100,000 P.T. (G.) Y.	Genoa .	1929	1931	1,250,000	8	1	..	..	2	2	6 *7·5-in.*, 12 *4-in.* A.A., 6 Pom Poms, 1 catapult, 2 seaplanes.	2 21″	32	1800	600
c.	**Veinticinco de Mayo**						Leghorn .														
c.d.s.	**General Belgrano†**	6100	328	59¾	24	13,000 B. Y.	Leghorn .	1897	1899	696,700	6–3 H.S.	1½	6 H.S.	6 H.S.	6 H.S.	6 H.S.	2 *10-in.*, 8 *6-in.*, 4 *6-pr.*	—	20	1000	515
c.d.s.	**Pueyrredon †** .	6100	328	59¾	24	13,000 R. Y.	Sestri Ponente	1898	1901	782,000	6–3 H.S.	1½	6 H.S.	5 H.S.	6 H.S.	6 H.S.	2 · *10-in.*, 8 *6-in.*, 4 *6-pr.*, 1 *1-pr.* A.A.	—	20	1000	480
b.	**Moreno** .	27,940	585	97¾	28	45,000* C.T. (G.) B. & W.	Camden, N.J. (N.Y.S.B.Co.)	1911	1915	2,200,000	12–10 K.S.	3–2	9–6 K.S.	9 K.S.	12–9 K.S.	6 K.S.	12 *12-in.*, 12 *6-in.*, 4 *3-in* A.A., 4 1·85-*in.*, 6 M.	2 (sub.) 21″	22·5	4200	1175
b.	**Rivadavia** .						Quincy, Mass.		1914												

*** Moreno and Rivadavia were converted to oil burning and fitted with geared turbines in 1928. † Converted to oil burning and armament altered in 1929. Used as training ships.**

Coast Defence Ships.—Libertad and Independencia, 2510 tons, 13 knots, completed at Birkenhead in 1891–93, and converted to oil fuel in 1927, carry two 9·4-in., four 4·7-in., four 3-pr. guns, 2 1·5-in. A.A.

River Gunboats.—Paraná and Rosario (Elswick, 1908), 1055 tons, two 6-in. howitzers, six 3-in., 2 L., 15 knots.

Training-Ship (cruiser).—Presidente Sarmiento (Birkenhead, 1896; refitted 1926), 2320 tons, 15 knots; four 4·7-in., four 6-pr., two 3-pr., 3 torpedo tubes.

Surveying Vessels.—Comodoro Rivadavia, ex-San Juan, Bahia Blanca ex-San Luis (Hawthorn Leslie, Newcastle, 1928), 790 tons, 1—3-in. 12 knots, Alferez Mackinlay (1914), 783 tons, 10 knots. Escort Vessels.—Murature, King (building). 1000 tons, 4000 B.H.P., 16 knots.

Tugs.—Mataco, Toba (completed 1928, at Messrs. Hawthorn Leslie's, Newcastle), Azapardo (1919), Ona, Querandi (Thornycroft, 1914), and 9 others.

Minesweepers.—Comodoro Py, Bouchard, Drummond, Granville, Parker, Robinson, Seaver, Fournier, and Spiro (1937–38); 550 tons; 2000 H.P.; 16 knots; two 3·9-in., two 2·9-in. guns; Bathurst, Golondrina, Pinedo, Segui, Thorne (ex-German, 1917); 17 knots; three 3-in. guns.

Oilers.—Punta Alta (1937), 800 tons D.W.; Ministro Ezcurra (1914), 10½ knots; Ministro Frere (1927), and Florintino Ameghino.

Transports.—Chaco, Pampa (ex-Rio Claro) (1923), 2,100 tons, 11 knots; Patagonia (1925), 9½ knots; I de Mayo.

A number of Cruisers, Destroyers and Submarines are projected. For Destroyers and Submarines, see Flotilla Tables.

BRAZIL.

Class.	NAME.	Standard Displacement.	Length. (Extreme.)	Beam.	Draught.	Horse-Power. Type of Machinery and Boilers.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.						Armament.		Speed.	Oil.	Complement.
											Belt.	Deck.	Side above Belt.	Bulkheads.	Gun Position.		Guns.	Torpedo Tubes.			
															Heavy Guns.	Second-ary.					
		tons.	ft.	ft.	ft.					£	in.	in.	in.	in.	in.	in.			knots.	tons.	
b.	Minas Gerais *	19,200	541	83	25	25,000 R. T.	Elswick	1909	1910	1,821,400	9–6–4 K.S.	2	9–6–4 K.S.	9	12–8 K.S.	9 K.S.	12 *12-in.*, 14 *4·7 in.*, 4 *3-in.* A.A.; 2 *3-pr.*, 4 1.5-*in.* M., 8 A.A. M.G.	—	21	—	850
b.	São Paulo *						Barrow	1908	1910												
l.cr.	†Baia	3150	401½	39	13½	22,000 B.C.T. (G.) T.	Elswick	1909	1910	..	..	1½	..	..	..	..	10 *4·7-in.*, 4 *3-pr.*	4 21" (D)	27	600	450
l.cr.	†Rio Grande do Sul																				

* Reconstructed and converted to oil fuel, 1934–39, 1937–40 respectively.

† Reconstructed, including conversion to oil fuel, at Rio de Janeiro, 1926.

Minelayers.—Cananeia, Cabedelo, Camocin, Camaqua, Caravela, Carioca, 188¾ feet, 552 tons, 2500 H.P., 14 knots, 1 4-in. gun, 50 mines. Itapimerim, 118 feet., 150 tons, 2 1·5-in., 30 mines. Itacurussa (1901), 210 tons, 10 knots, 1 1·5-in. Minesweepers.—Iguape, Itajai (1908), 150 tons, 10 knots, 1·85-in.

River Monitors.—Pernambuco, 470 tons, 11 knots, built at Rio de Janeiro (1910), two 4·7-in., 2 3-pr. guns. Parnahiyba, 600 tons, 180½ feet in length, 12 knots, one 6-in. gun. Paraguassu, 430 tons, 146 feet, 1 4·7-in. gun., 13 knots. Oiapoque (1907), 195 tons, 14 knots, two 3-pdr., 2 M.

Submarine Tender.—Ceará (Spezia, 1916). 4000 tons, 4100 H.P., 14 knots, four 4-in., four 3-pr.

Repair Ship.—Belmonte (ex-German SS. Valesia), 5227 tons gross, four 4·7-in, six 6-pr., 2700 H.P., 12 knots.

Training Ship.—Almirante Saldanha, Vickers' (1934). A four-masted schooner, 3325 tons, 305 feet over all, four 4-in. and one 3-in. A.A. guns, one 21-in. torpedo tube, 1400 B.H.P.aux., 12 knots.

Survey Vessels.—Rio Branco, 895 tons, 15 knots, two 6-pr. Vital de Oliveria, Jose Bonifacio, 1,300 tons, 9 knots, two 4-in., two 6-pr. Jacequay, 800 tons, 16 knots.

Submarine Chasers.—C.S.1, C.S.2 (1942), 1 3-in.

Tankers.—Novais de Abreu (1918), 10 knots; Marajo (ex-Malistan, 1924), 10 knots; Potengi (1938), 10 knots.

Ocean Going Tugs.—Laurindo Pitta (1910), 514 tons, 11 knots; Annibal Mendonca (1919), 12 knots, 2 3-pdr.; Heitor Perdigao, Muniz Freire, Lomba (1924), 200 tons, 11 knots, 2 3-pdr. Lightship Tenders.—Lahmeyer, Tenete Mario Alves, 280 tons.

For Destroyers and Submarines, see Flotilla Tables.

CHILE.

Class.	NAME.	Standard Displacement.	Length. (Extreme.)	Beam.	Draught.	Horse-Power. Type of Machinery and Boilers.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.						Armament.		Speed.	Fuel.		Complement.
											Belt.	Deck.	Side above Belt.	Bulkhead.	Gun Position. Heavy Guns.	Gun Position. Second-ary.	Guns.	Torpedo Tubes.		Coal.	Oil.	
		tons.	ft.	ft. ins.	ft. ins.					£	in.	in.	in.	in.	in.	in.			knots.	tons.	tons.	
b.	**Almirante Latorre** * (ex-H.M.S. Canada)	28,950	661	92 6	29 0	37,000 P.T. Y.	Elswick	1913	1915	..	9–4	4–2½	4½	..	10	6	10 *14-in.*, 14 *6-in.*, 4 *4-in.*, A.A., 4 *1.8-in.*, 1 catapult.	4 (sub.) 21″	23	—	4300	1000
cr.	**Chacabuco**	3417	360	46 6	17 0	15,500	Elswick	1898	1891	..	..	..	..	..	..	..	4 *6-in.*	2 18″				
cr.	**Blanco Encalada** †	3435	370 p.p.	46 6	19 6	14,500	Elswick	1893	1894	..	..	4–1¾	..	..	..	..	2 *8-in.*, 8 *6-in.*, 4 *3-in.*	2 18″	22·7	850	—	385
cr.	**Cruisers** (two)	10,000					Projected										*8-in.*					

* Fitted with bulges, converted to oil burning, and modernised in England (completed 1931).

† Training ship.

Oilers (Armstrongs, 1930)—Maipo, Rancagua, 3,080 tons displacement, two 4·7-in. guns. Coastguard Vessels—Orompello, Elicura, 580 tons; built 1919; 1400 I.H.P.; 11 knots; 2 3-in. guns. Sibbald, Yelcho, Micalvi, Condor, and Yanez. Aguila and one other, 1,000 tons (building). Submarine Depot Ship—Araucano (Vickers-Armstrongs, Barrow), completed 1930; displacement 5,890 tons; armament two 4·7-in., two 3-in. A.A.; speed 18 knots; H.P. 2,500; 1 seaplane. Five tugs, 790 tons, 11 knots, 1 3-in. gun. Two tugs, 320 tons, 12 knots. Two towing launches. Two Cruisers projected, probably 10,000 tons, with 8-in. guns. Two Tugs projected.

Surveying Vessel.—Vidal Gormaz (ex-Jason), 700 tons, 13 knots. Transport.—Angamos, 3,800 tons (building). Abtao (1912), 10 knots.

For Destroyers and Submarines, see Flotilla Tables.

DENMARK.*

Class.	NAME.	Standard Displacement.	Length. (Extreme.)		Beam.		Draught.		Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.						Armament.		Speed	Fuel. Coal. / Oil.	Complement.
														Belt.	Deck.	Side above Belt.	Bulkhead.	Gun Position. Heavy Guns.	Gun Position. Second-ary.	Guns.	Torpedo Tubes.			
		tons.	ft.	ins.	ft.	ins.	ft.	ins.					£	in.	in.	in.	in.	in.	in.			knots.	tons.	
cr.	**Niels Iuel**† .	3800	295	4	53	6	15	9	5500 R. Y.	Copenhagen	1918	1923	..	8–4 K.S.	2	..	..	..	2 K.S.	10 *5·9-in.*, 2 *2·4-in.*, 8 M.G., 10 *·78-in.* A.A.	2 (sub.) 18″	17·0	240 250	365
c.d.s.	**Peder Skram** .	3500	286	7	51	6	16	3	5400 R. T.	Copenhagen	1908	1909	..	8–4 K.S.	2	..	..	7 K.S.	6 K.S.	2 *9·4-in.*, 4 *5·9-in.*, 8 *8-in.*, 2 *1·45-in.*, 4 *·78-in.* M., 2 M.	4 (sub.) 18″	16·0	250 —	275

* Under the control of Germany.

† Modernised 1930.

Minelayers.—Lossen 640 tons, 12 knots, 2 3-in., 2 A.A. guns, 175 mines; Sixtus and Kvintus, 186 tons, 8 knots, 2 1-pr. guns, 60 mines. Steamboat A, 96 tons, 7 knots, 2 M.G. Lindormen (1941), 500 tons, 14 knots, 2 3-in.

Minesweepers.—Springeren, Storen, Soridderen, Sohunden, Havhesten and Narhvalen, 110 tons, 24·3 knots, 2 2½-in. guns, 1 torpedo tube; Soloven, Sobjörnen, Soulven, 270 tons, 18 knots, 2 3-in. Ex-torpedo boats.

Corvettes.—Hvalrossen, 169 tons, 26·3 knots, 1 3-in. gun, 4 18-in. torpedo tubes; Makrelen, Nordkaperen, Havkatten, and Saelen, 110 tons, 24·3 knots, 2 2¼-in. guns, 4 18-in. torpedo tubes. Ex-torpedo boats.

Surveying Vessels.—Hejmdal, 705 tons, 12½ knots, 2 3-in. guns, 4 ·71-in. A.A.; Ternen, 80 tons, 1 1.46-in. Freja (1940), 315 tons, 10 knots.

Fishery Protection Vessels.—Ingolf, 1180 tons, 16½ knots, 2 4·7 in., 2 2¼-in. guns, 1 aircraft; Hvidbjörnen, 1050 tons, 14½ knots, 2 3½-in. guns; Islands Falk, 730 tons, 13 knots, 2 3-in., 2 1¾-in. guns; Beskytteren, 415 tons, 11 knots, 1 2¼-in. gun; Maagen, 110 tons, 8 knots, 1 1½-in. gun; Aegir, 500 tons, 14 knots, 2 6-pr.

Depot Ships.—Hekla, Gronsund, Fyen. Transport Ships.—Sleipner, 110 tons, 8·7 knots; Middegrunden, Fremad, Kongedybet. 4 Icebreakers. 3 Cable Ships.

Repair Ship.—Henrik Gerner (1928), 463 tons, 13 knots, 2 3-in. Royal Yacht.—Dannebrog (1932), 1,130 tons, 14 knots.

For Torpedo Boats and Submarines, see Flotilla Tables.

FRANCE.—Battleships.

Class.	NAME.	Standard Displacement.	Length. (Extreme.)		Beam.		Draught.		Horse-Power. Type of Machinery and Boilers.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.						Armament.		Speed.	Fuel. Oil.	Complement.
														Belt.	Deck.	Side above Belt.	Bulkhead.	Gun Position.		Guns.	Torpedo Tubes.			
																		Heavy Guns.	Second-ary.					
		tons.	ft.	ins.	ft.	ins.	ft.	ins.					£	in.	in.	in.	in.	in.	in.			knots.	tons.	
b.	Richelieu †	35,000	794	0	108	6	26	7	155,000 (G.) I.	Brest	1939	1940	..	9–16	8	..	..	..	..	8 *15-in.*, 15 *6-in.*, 12 *1·5-in.* A.A., 2 catapults. 4 aircraft.	..	about 31	..	1500
b.	Jean Bart ‡		W.L.							St. Nazaire	1939	1940	..											
b.	Clemenceau ‡									Brest	Bldg.	..	..											
b.c.	Strasbourg *	26,500	702	0	101	8	25	0	100,000 P.T. (G) I.	St. Nazaire	1936	1938	..	10–8	4–9	..	..	13·8	..	8 *13-in.*, 16 *5·1-in.*, 4 *1·85-in.*, 8 *1·46-in.*, 32 ·5 M., 1 catapult, 4 aircraft.	..	29½	..	1400
b.c.	Dunkerque *									Brest	1935	1937	5,200,000											
b.	Provence *	22,189	544	6	88	6	32	0	43,000 P.T. I.	Lorient	1913	1916	2,589,000	11–7 K.S.	2¾–1¾	7 K.S.	7 K.S.	10½ K.S.	7 K.S.	10 *13·4-in.*, 14 *5·4-in.*, 8 *3-in.* A.A., 5 *3-pr.*, 2 *1-pr.*, 2 L., 4 seaplanes. 1 catapult.	4 (sub.) 18″	21·0	2600	1190

* Scuttled at Toulon, 27 November 1942.

† Operated by Allies.

‡ Reported to be extensively damaged.

FRANCE.—Battleships—*continued.*

Class.	NAME.	Standard Displacement.	Length. (Extreme.)	Beam.	Draught.	Horse-power. Type of Machinery and Boilers.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.						Armament.		Speed.	Fuel.	Complement.
											Belt.	Deck.	Side above Belt.	Bulkhead.	Gun Position.		Guns.	Torpedo Tubes.		Coal. Oil.	
															Heavy Guns.	Second-ary.					
		tons.	ft. ins.	ft. ins.	ft. ins.					£	in.	in.	in.	in.	in.	in.			knots.	tons.	
b.	**Courbet** *† .	22,189	551 0	92 6	32 0	28,000 Nic. P.T.	**Brest** .	1911	1913	2,508,388	11–7 K.S.	2¾–1¾	7 K.S.	7 K.S.	10½ K.S.	7 K.S.	12 *12-in.*, 22 *5·4-in.*, 7 *3-in.* A.A., 2 *1-pr.*, 2 L.	4 (sub.) 18″	20·0	300 2700	1068
b.	**Paris** *† . .	22,189	551 0	92 6	32 6	28,000 Nic. P.T.	**La Seyne** .	1912	1914	2,603,920											
b.	**Lorraine** * .	22,189	544 6	88 6	32 0	42,000 B. P.T.	St. Nazaire	1913	1916	2,642,439	11–7 K.S.	2¾–1¾	7 K.S.	7 K.S.	10½ K.S.	7 K.S.	8 *13·4-in.*, 14 *5·4-in.*, 8 *3·9-in.* A.A., 5 *47mm.* A.A., 2 *1-pr.*, 2 L., 2 aircraft, 1 catapult	4 (sub.) 18″	21½	300 2600	1167

* Reconstructed and modernised between 1923 and 1935.

† Operated by the Allies.

Aircraft Carriers.

Class.	NAME.	Standard Displacement.	Length. (Extreme.)	Beam.	Draught.	Horse-power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.		Armament.		Speed.	Fuel.	Complement.
											Belt. / Deck.	Gun Position.	Guns.	Torpedo Tubes.		Oil.	
		tons.	ft. ins.	ft. ins.	ft. ins.					£	in.	in.			knots.	tons.	
A.C.	Bearn*	22,146	599 0	115 6	30 6	37,200 Tur.& R.	La Seyne	1920	1928	..	3¼ / 1–3	..	8 *6·1-in.*, 6 *3-in.* A.A., 8 *1-pr.* A.A., 12 M. A.A., 41 planes	4 21·7"	21·5	2070	875
Aircraft Transport	Commandant Teste ‖	10,000	548 0	88 7	22 9	21,000 †	Bordeaux	1929	1932	..	2 / 1½	..	12 *3·9-in.* A.A., 8 *3-pr.* A.A., 12 M., 19 planes, 4 catapults, 5 cranes.	—	20·5		648
A.C. A.C.	Joffre ‡ Painleve ‡	18,000	775 0	112 0			St. Nazaire	Bldg.					8 *5·1-in.* guns, 40 planes.		32		

* Originally designed and laid down as a battleship; reconditioned 1935.

‡ Reported to be extensively damaged.

† Schneider-Zoelly turbines (G.). Yarrow-Loire S.T. boilers.

‖ Scuttled at Toulon, 27 November 1942.

FRANCE.—Cruisers.

Class.	NAME.	Standard Displacement.	Length. (Extreme.)		Beam.		Draught.		Horse-Power. Type of Machinery and Boilers.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour. Belt.	Armour. Gun Position.	Armament. Guns.	Armament. Torpedo Tubes.	Speed.	Fuel. Oil.	Complement.
		tons.	ft.	ins.	ft.	ins.	ft.	ins.					£	in.	in.			knots.	tons.	
Training cruiser	**Jeanne d'Arc**	6496	557	9	57	5	18	8	32,500	St. Nazaire	1930	1931	..	..	..	8 *6·1-in.*, 4 *3-in.* A.A., 2 *1·5-in.*, 2 M., 2 seaplanes, 2 catapults	2 21·7″	26	1400	506
Improved La Galissonnière	**De Grasse***	8000	..		..		..		..	Lorient	Bldg.	..	..	..	..	9 *6-in.*, 6 *3.9-in.* A.A., 8 M. A.A., 2 aircraft	6 21″	..	..	..
La Galissonniere	**La Galissonnière†**	7600	589	0	57	4	17	5	84,000 (G.)	Brest	1933	1935	..	4¾	Deck 1½	9 *6-in.*, 8 *3·5-in.* A.A., 8 *·5-in.* A.A., 4 seaplanes, 1 catapult	2 21·7″ (D.)	31	1500	540
	Jean-de-Vienne†									Lorient	1935	1936								
	Marseillaise†									St. Nazaire	1935	1937								
	Gloire									Bordeaux	1935	1937								
	Montcalm									La Seyne	1935	1937								
	Georges Leygues									St. Nazaire	1935	1937								
—	**Algérie†**	10,000	610	3	65	8	23	0	84,000 (G.) Pen.	Brest	1932	1934	1,920,000	about 4	Deck 3	8 *8-in.*, 12 *3·9-in.* A.A., 4 *1·5-in.*, 16 M., 1 catapult, 2 seaplanes	2 21″ (T.)	31	1900	746
Suffren Class	**Dupleix**	10,000	636	6	63	6	24	0	90,000 Rat. (G.) G.	Brest	1930	1932	1,570,000	..	..	8 *8-in.*, 8 *3·5-in.* A.A., 6 *1·46-in.* A.A., 12 M., 3 seaplanes, 2 catapults	2 21″ (T.)	32	1800	605
	Foch†										1929	1931	1,450,000							
	Colbert†										1928	1931	1,270,000							
	Suffren‡	10,000	643	0	65	0	24	0	90,000 Rat. (G.) G.	Brest	1927	1930	1,210,000	..	..	8 *8-in.*, 8 *3-in.* A.A., 8 *1·46-in.* A.A., 12 M., 3 seaplanes, 2 catapults	2 21″ (T.)	32	1800	605
Duquesne Class	**Tourville**	10,000	626	8	62	4	23	0	120,000 Rat. (G.) G.	Lorient	1926	1928	..	..	..	8 *8-in.*, 8 *3-in.* A.A., 8 *1·46-in.*, 2 seaplanes, 1 catapult	2 21″ (T.)	33·5	2000	620
	Duquesne†									Brest	1925									

Duguay-Trouin Class	**Duguay-Trouin**	7249	594	10	57	6	20	8	110,000 P.T.(G.) G.	Brest	1923	1926	..	..	..	8 *6·1-in.*, 4 *3-in.* A.A., 2 *3-pr.*, 4 M., 1 L., 1 seaplane, 1 catapult	4 21·7" (T.)	34	1480	578
	Primauguet									Brest	1924	1926								
	La Motte Picquet									Lorient	1924	1926								
M.Cr.	**Emilé Bertin**	5886	580	9	52	0	16	4	102,000 P.T.(G.) Pen.	St. Nazaire	1933	1934	..	..	Deck 2	9 *6-in.*, 4 *3·5-in.* A.A., 4 *1·5-in.* A.A., 200 mines, 8 M., 1 catapult, 2 aircraft	6 21·7" a.w. (T.)	34·0	1800	550

* Reported to be extensively damaged. ‡ Operated by the Allies. † Scuttled at Toulon, 27 November 1942.

River Gunboats.—Francis Garnier (1929), 639 tons, 15 knots, two 4-in., one 3-in. A.A.; Vigilante, Argus (1924), 218 tons, 12 knots, two 3-in., two 1-pr.; Balny (1921), 201 tons, 14 knots, one 3-in., 4 M.; Doudart de Lagrée (1909), 183 tons, 14 knots, one 3-in., two 1-pr.; Mytho, Tourane (1934), 95 tons, 250 H.P. (Diesel), 10 knots, one 3-in., two 1-pr.; Avalanche and Commandant Bourdaise (1920). 128 tons, 16·5 knots, one 3-in. gun, two 1-pr.; No. 1 (1925), 38 tons, 9 knots, one 1·5-in.

Minesweepers.—Engageante and Diligente † (1917), 315 tons, 14½ knots, two 3·9-in.; Étourdi (1916), 310 tons, 17 knots, two 3·9-in.; Dédaigneuse, Tapageuse (1916), 266 tons, 15 knots, two 3·9-in.; Granit, Meulière (1919), 354 tons, 12·5 knots, one 9-pr., Commandant Bory, Commandant Delage, Commandant Duboc † and Commandant Riviere, 630 tons, 20 knots, two 3·9-in.; Elan, Chamois, Chevreuil,† Gazelle, 630–647 tons, 20 knots, two 3·9-in., 8 ·5-in.; Annamite, La Surprise, 647 tons; La Capricieuse,† La Moquese † Commandant Domine,† L'Impetueuse, La Curieuse, La Boudeuse, La Batailleuse, La Gracieuse, Amiral Senes, Enseigne Ballande, Matelot Leblanc, Rageot de la Touche, 630 tons, 20 knots, two 3·9-in., 8 ·5-in. M.

Minelayers.—Castor, 3,150 tons, 14 knots. four 3·9-in., two 1·5 A.A., 368 mines; Pollux, 2,461 tons, 14 knots, four 3·9-in., 234 mines. Both converted 1930.

Submarine Parent Ship.—Jules Verne (1931), 5,747 tons, 7,000 H.P. (Diesel), 16 knots, mounting four 3·5-in. A.A., four 1-pdr. A.A.

Colonial Sloops.—Dumont D'Urville, Savorgnan de Brazza,† and d'Entrecasteaux (1932–1933). Amiral Charner, and D'Iberville (1933–1935), Beautemps-Beaupré and La Grandiere (1917), 1969 tons, 3,200 H.P. (Diesel), 17 knots, armament three 5·4-in., four 1·5-in. A.A., 6 M., 50 mines, 1 seaplane; Ville d'Ys (ex-Andromede) (1917) 1,122 tons, 17 knots, mounting three 3·9-in., two 3-in. (1 A.A)., 2 M.

Despatch Vessels.—Duperré Class:—Enseigne Henry, Dubourdieu (1919–1920), 453 tons, 17 knots, one 5·4-in., one 3·9-in. "Arras" Class:—Calais. Lassigny, Epinal,† Coucy,† Amiens,† Tahure, Arras,† (1919–1923), 644 tons, 20 knots, two 5·4-in., one 3-in. A.A., 2 M. "Aisne" Class:—Ailette, Yser, Somme, Marne (1917–1918), 490–600 tons, 21 knots, four 3·9-in. guns, one 3-in.

Net-Layer.—Le Gladiateur, (1934), 2,293 tons, 370 ft. 8 in. long, 7,700 H.P., 21 knots, four 3·5-in. A.A., 6 M.

Surveying Ships.—Amiral Mouchez, 719 tons, 12 knots, two 3·9-in.; La Perouse, 780 tons, 11 knots; Astrolabe, Octant, and Gaston-Rivier (1918), 315 tons, 10 knots, 1 1·85-in.; Chimère (1901), 613 tons, 14 knots, 1 3·9 in.; Estafette, Sentinelle, 315 tons, 10 knots; Les Eparges, Ypres, 644 tons, 20 knots, one 3-in. gun; President Theodore Tissier † (1934), 965 tons, 11 knots.

Motor Torpedo Boats.—V.T.B.'s 8 and 10, 62 ft., 19 tons, 2000 H.P., 46 knots, 2 18-in. T.T.; V.T.B.'s, 11-14, 45 knots, 28 tons, building; V.T.B.'s, 15–40, 37 tons, building.

Submarine Chasers.—Nos. 1-4 (1935), 148 tons, 2,400 H.P., 20 knots, one 3-in. gun. Two in number (1940), 112 tons, 16 knots. Six in number (1918), 70 tons, 16 knots, one 3-in gun. Thirteen in number, 112 tons, 16 knots, building. Eight in number, 130 tons, 16 knots, building, fitted for depth charges.

Patrol Vessels.—Primevère, 490 tons, 8 knots; Fauvette II, Passereau II, 315 tons, 10 knots.

Refrigerator Ships.—Champlain (1919), 520 tons, 10 knots, one 3-in. gun; Austral, Boreal, 2,230 tons, 1,200 I.H.P., 12 knots, one 3-in. gun.

Aircraft Supply Ships.—Belfort† (1921), 644 tons, 20 knots, one 3-in. gun; Hamelin, 622 tons, 12 knots, one 3-in. gun; Sans-Souci, Sans Peur, Sans-Reproche, Sans-Pareil, 1,200 tons, 18 knots, one 3-in. gun, building.

Fishery Protection Vessel.—Quentin Roosevelt † (1918), 585 tons, 14 knots, 1 3-in.

Four Cable ships. Four Water carriers. Tugs. Three Training ships. Two hospital ships, A large number of converted merchant vessels.

Transports.—Golo, 2118 tons, 12½ knots, two 3-in., two 1-pr.; Loiret, Coetlogon, Forfait, Jeanne-of-Genevieve, 622 tons, 12 knots, one 3-in. gun; Aude, 1,820 tons, 12 knots.

Oilers.—Adour, Lot, Tarn (1940), 4,200 tons, 5,000 S.H.P., 15 knots; Charente, Mayenne. Baise (building); Mekong, Elorn and Var, 5,482 tons, 6,000 H.P., 18½ knots, two 3·9-in. guns, two 1·5-in. A.A.; Nivose (1934), 8,500 tons, 11 knots, 2 3·9-in., 2 1·46 in. A.A.; Le Loing (1927), 9,900 tons, 13·5 knots, 2 3·9-in., 2 3-in. A.A.; Rance, Durance and Drome (1920), 1,055 tons, 10·5 knots, 2 3-in. A.A.; Garonne (1912), 3,533 tons, 11 knots, 2 4-in.; La Seine, La Saone, Le Liamone, La Medjerda (Building) 11,000 tons capacity.

Training Ships.—Condorcet (1911), 17,597 tons, 19 knots, 4 12-in.; 12 9·4-in., 2 3-in. A.A.; 2 T.T.

Target Vessel.—L'Impassible (1940).

Corvettes.—(ex-British), Aconit, and a number unknown.†

For Destroyers, Flotilla Leaders and Submarines, see Flotilla Tables.

† Operated by the Allies.

GERMANY.—Battleships.

Class.	NAME.	Normal Displacement.	Length. (Extreme.)	Beam.	Draught.	Horse-Power. Type of Machinery and Boilers.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.				Gun Position.		Armament.		Speed.	Coal. / Oil.	Complement.
											Belt.	Deck.	Side above Belt.	Bulkhead.	Heavy Guns.	Second-ary.	Guns.	Torpedo Tubes.			
		tons.	ft. ins.	ft. ins.	ft. ins.					£	in.	in.	in.	in.	in.	in.			knots.	tons.	
b.	"H" and "I"	40,000	..	..	..	..	..	Bldg.	..	..	..	..	..	..	..	..	..	..	..	..	..
b.	Tirpitz §	40,000	792 6	118 0	26 0	(G.)	Wilhelmshaven	1939	1941	..	..	..	..	..	..	..	8 *15-in.*, 12 *5·9-in.*, 16 *4·1-in.*, 4 seaplanes, 2 catapults	..	abt. 28	..	..
b.c.	Gneisenau §	26,000 (standard)	741 6	98 6	24 8	(G.) & D.	Kiel	1936	1938	..	13	6	..	..	..	.	9 *11-in.*, 12 *5·9-in.*, 14 *4·1-in.* A.A., 16 *1·5-in.* A.A., 4 aircraft, 2 catapults	..	27	..	1461
b.*	Lützow (*ex*-Deutschland)	10,000 (standard)	609 3	67 6	19 0	54,000–56,800 Diesel ‡	Deutsche Werke, Kiel	1931	1933	estimated 3,750,000	about 4	1½–3	—	—	about 7	—	6 *11-in.*, 8 *5·9-in.*, 6 *4·1-in.* A.A., 8 *1·5-in.* A.A., 10 M., 1 catapult, 2 aircraft	8 21" (Q.)	26	— / 1200	965
b.*	Admiral Scheer						Wilhelmshaven	1933	1934	estimated 3,530,000											
b.	Schlesien †	12,300	419 0	72 10	25 3	17,000 T.S. R.	Schichau	1906	1908	1,214,000	9½–4 K.S.	3	8 K.S.	6 K.S.	11–6 K.S.	6¾ K.S.	4 *11-in.*, 10 *5·9-in.*, 4 *3·5-in.* A.A., 23 M.	..	18	1771 / 197	727
b.	Schleswig-Holstein †						Germania														

AIRCRAFT CARRIERS.

Class.	NAME.	Normal Displacement.	Length. (Extreme.)	Beam.	Draught.	Horse-Power. Type of Machinery and Boilers.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Belt.	Deck.	Side above Belt.	Bulkhead.	Heavy Guns.	Second-ary.	Guns.	Torpedo Tubes.	Speed.	Coal. / Oil.	Complement.
A. C.	Graf Zeppelin	25,000	820 3	88 6	18 4	180,000 (G.)	Deutsche Werke	1938	1943		3—4	1½–3					16 *5·9-in.*, 10 *4·1-in.*, H.A. 22 smaller, 40 aircraft		about 32		
A. C.	Peter Strasser						Germania Werft	Bldg.													

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* Officially rated as "Armoured Ships."

† Reconstructed 1925–30. Classified as schoolships.

‡ Consists of eight double acting two-stroke M.A.N. Diesels.

§ Reported to be extensively damaged.

GERMANY.—Cruisers.

Class.	NAME.	Standard Displacement.	Length. (Extreme.)		Beam. (Extreme.)		Draught.		Horse-Power. Type of Machinery and Boilers.	Where Built.	Maker of Engines.	Date of Launch.	Date of Completion.	Cost.	Armour.		Armament.		Speed.	Fuel. Coal. / Oil.	Complement.
															Belt.	Gun Position.	Guns.	Torpedo Tubes.			
		tons.	ft.	ins.	ft.	ins.	ft.	ins.						£	in.	in.			knots.	tons.	
cr.	Admiral Hipper .	10,000	639 W. L.	9	69	11	15	5	(G.)	Blohm and Voss	..	1937	1939	..	..	..	8 *8-in.*, 12 *4·1-in.* A.A., 12 *1·45-in.* A.A.; 3 aircraft, 1 catapult	4 *21-in.* (T.)	32	..	1000
cr.	Prinz Eugen §	10,000	654 W. L.	6	71	3	15	1	(G.)	Germania Werft	..	1938	1940	..	..	..					
cr.	Seydlitz .									Deschimag		1938	1940	..	..	..					
	ex-Lutzow									Deschimag											
.	M, N, O and P	7300	584	0	55	6	15	9	80,000 (G.) & D.	Deutsche Werft, Kiel	..	Bldg.	..	..	..	..	8 *5·9-in.*, 4 *4-in.*, 1 aircraft	8 *21-in.*	32	..	..
l.c,	Leipzig .	6000	581	0	53	5	15	7	72,000† [geared turbines 60,000, Diesels 12,000]	Wilhelmshaven	Kiel	1929	1931	2,050,000	3–4	..	9 *5·9-in.*, 8 *3·5-in.* A.A., 8 *1·5-in.* A.A.; 1 catapult, 2 aircraft	4 triple *21-in.* a.w.	32	— 1500 (including Diesel oil)	656
l.c.	Nürnberg .		557 W. L.	9						Kiel	Kiel	1934	1935			..					
l.c.	Köln .	6000	570	10	49	10	17	8	65,000‡	Wilhelmshaven	Kiel	1928	1930	1,785,000	3	..	9 *5·9-in.*, 6 *3·5-in.* A.A., 1 catapult, 2 aircraft	4 triple *21-in.* a.w.	32	— 1200	592
l.c.	Emden *	5400	510	2	46	11	17	4	46,500 (G.)	Wilhelmshaven	Wilhelmshaven	1925	1925	..	4	..	8 *5·9-in.*, 3 *3·5-in.* A.A., 4 M.	2 twin *19·7-in.* a.w.	29	— 1260	630

* Training Ship.

† Three propeller shafts, of which the centre shaft is Diesel-driven and the outers turbine-driven. Diesels used for cruising or combined with the turbines to give full speed.

§ Reported to be extensively damaged.

‡ Parsons geared turbines with Diesels for cruising.

GERMANY.—Miscellaneous Craft.

Escort Vessels.—F 1, 4, 5, 8, 9 (1936), 600 tons, 240 feet, 28 knots, 2 4·1-in. 4 1·46-in., complement 103. Probably others, number unknown.

Gunnery Training Ships.—Drache (1908), 790 tons, 15 knots, 4 4·1-in.; Fuchs (1919), 525 tons, 16 knots, 2 3·4-in.; Delphin; Mars; Eduard Jungman. Carl Zeiss.

Fishery Protection Vessels.—Weser and Elbe (Wilhelmshaven, 1931), 590 tons, 1600 H.P. (Diesel), 15 knots, 1 3·5-in. gun.

Experimental Vessels.—Pelican and Nautilus (500 tons, 17 knots); Strahl, 1,643 tons, 10 knots; Stortebeker and Arkona, 525 tons, 16 knots, 1 4·1-in. gun. Klaus von Bevern (1911), 800 tons, 25 knots, 2 4·1-in.

Motor Torpedo Boats ("E" Boats).—S. 7—17 (1934–38), and S 18—25 (1939), 70 tons, 1 m.g. A.A., 2 19·7-in. T.T.; S 26—50 (1939), 86 tons, 105-ft. 35 knots, 2 1·46-in. A.A. Probably others, number unknown.

Submarine Chasers.—Albatross Class, number unknown.

Patrol Vessel.—UZ (S) 18, 60 tons, 14 knots.

Tenders.—Hecht, Gazelle, Frauenlob, 525 tons, 16 knots. Nordsee, 830 tons, 12 knots; Taucher, 202 tons, 6·6 knots; Hai, Konigen Luise, 600 tons, 28 knots, 2 4·1-in.; Taku (1919), 450 tons, 16 knots, 1 4·1-in.

Sailing Training Ships.—Gorch Fock (Hamburg, 1933); Three-masted barque, 239 feet in length, 1,500 tons, 500 H.P. auxiliary motor giving 8 knots; Horst Wessel (1936) and Albert Leo Schlageter (1938), 1,634 tons, 295 ft. 3 in. in length, 35 ft. 4 in. beam, 15 ft. 9 in. draught, 750 H.P., auxiliary motor giving 10 knots, complement 78, accommodation for 200 cadets. Training Vessels.—Nordsee (1914), 830 tons, 12 knots.; Paul Beneke (1936), 460 tons, 13 knots; Dhame, Spree, Beowulf, Freyr, Frihlof, Wotan, Sigfrid Hagen, Hugin, Hildebrand, Odin, Volker, and Munin, 400 tons, 10 knots, 1 3·5-in., 1 M.

Motor Minesweepers.—R 1—16 (1933—4), 85 ft., 44 tons, 700 H.P., 17½ knots, 1 1-pr. gun; R 17—34 (1935–1938), R 34—40 (1939), 90 tons. Probably others, number unknown.

Mining and Barrage Vessels.—MT 1 and 2, 550 tons, 10 knots; 8 small craft (1906–15), 70 tons, 9 knots; I—IV (1936), 120 tons.

Target Ships.—Zähringen (ex-battleship), 11,800 tons, 13 knots; Hessen, 13,000 tons. Wireless controlled.

Target Tugs and Control Ships.—Komet and Blitz, 650 tons, 30 knots *ex* T.B.'s. Blitz is control ship for Zähringen.

Depot Ships.—Tsingtau (1934), 1 970 tons, 17½ knots, 2 3·5-in., 4 m.g.; Saar (1934), 2,710 tons, 16 knots, 3 4·1-in., 4 m.g.; Weichsel (1923), 3, 950 tons, 10½ knots. Donau, 10 knots; Tanga (1939); Waldemar Kophamel and Wilhelm Bauer (1940); Erwin Wassner (1938), 5,000 tons; Brommy (1916), 380 tons, 16 knots, 1 4·1-in.; Raule (ex-Wacht), 1919; Von der Groeben (1919). Karl Peters and Adolf Luderitz (1940), 3,000 tons.

Torpedo Recovery Vessels.—Orkan (1916), 470 tons, 10 knots; ex-Torpedo Boats 123, 139, 155, 156, 157, 158, 196, 650 tons, 22 knots, 1 or 2 M. F 2, 7, 10 (1936), 600 tons, 240 ft., 28 knots, 2 4·1-in., 4 1·46-in., complement 103.

Surveying Vessels.—Meteor (1924), 1,150 tons, 14 knots, one 3·4-in.; Hooge, Norderoog, Suderoog (1912), 90 tons. Triton.

Minesweepers.—17 in number (1917–1919), 475–525 tons, 1,800 H.P., 16 knots, 1 4·1-in. gun.; M 1—40 600 tons, 17 knots, 2 4·1-in. guns, 1 1·46-in.

Oilers.—Samland, 10,111 tons; Franken, Ditmarschen, Ermland, Westerwald. Probably others, number unknown.

U-Boat Tenders.—Memel, 998 tons, 13 knots; Mosel, 796 tons, 9 knots; Acheron, Jagd, 525 tons, 16 knots; Warnow, 726 tons gross, 13 knots; Lech, 3,850 tons, 13 knots.

Sloops.—Hela (1940), Grille (1935), 2,560 tons, 20 knots, 3 4·1-in., 2 1·46-in. A.A., 4 M.

Minelayers.—A, B, C, and D (1940); M.T.1., M.T.2 (1917), 550 tons, 10 knots, 1 M.; C. 1, 3, 5, 9, 10, 14, 16, 21–30, 80 tons, 9 knots. Probably others, number unknown.

Hospital Ships.—8 in Number.

River Patrol Vessels.—Birago (1916), 60 tons, 11 knots; Bechelaren (1932), 185 tons, 16·8 knots, 4 2·6-in. 4 M.

River Minesweepers.—FHR 1-12. 4 tons, 2 M.

Tugs.—Number unknown.

For Destroyers, Torpedo Boats and Submarines, see Flotilla Tables.

GREECE.‡

Class.	NAME.	Standard Displacement.	Length. (Extreme.)	Beam.	Draught.	Horse-Power. Type of Machinery and Boilers.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.						Armament.		Speed.	Coal. / Oil.	Complement.
											Belt.	Deck.	Side above Belt.	Bulkhead.	Gun Position.		Guns.	Torpedo Tubes.			
															Heavy Guns.	Second-ary.					
		tons.	ft.	ft.	ft.					£	in.	in.	in.	in.	in.	in.			knots.	tons.	
cr.	**Giorgios Averoff** *	9301	462	69	24¾	19,000 (21,500 *t*) B.	Leghorn (Orlando)	1910	1911	1,100,000	8–3½ K.S.	1¾	7	7	8–6½	7	4 *9·2-in.*, 8 *7·5-in.*, 16 *3-in.*, 4 *3-pr.*, 2 *3-in.* A.A., 2 M.	3 (sub.) *18-in.*	22½ (24 *t.*) †	1500 / —	620

* Retubed and refitted 1932. † Probable speed 15 knots.

TRAINING SHIP.—Ares (1929), 1,870 tons, 11 knots, four 3-in. guns.

REPAIR SHIP.—Hephestos (1920) 4,549 tons gross, 11½ knots, four 4-in. A.A.

M.T.B's., T1 and T2, Thornycroft type, 55 ft., 37 knots, two Lewis guns 2 T.T., 4 built at Venice, for Customs Service T3 and T4, 66 ft., 43 knots, 32 tons, 2 T.T., building.

DESPATCH VESSEL AND MINELAYER.—Tenedos, 450 tons, 13 knots, 40 mines.

COAST DEFENCE VESSEL.—Lemnos (ex-U.S.N. Idaho) (1908).

‡ Under the control of Germany. Part of the Greek Fleet is in British Hands.

For Destroyers, Torpedo Boats and Submarines, see Flotilla Tables.

ITALY.—Battleships.

Class.	NAME.	Standard Displacement.	Length. (Extreme.)		Beam.		Draught.	Horse-Power. Type of Machinery and Boilers.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.						Armament.		Speed.	Fuel.	Complement.
													Belt.	Deck.	Side above Belt.	Bulkhead.	Gun Position.		Guns.	Torpedo Tubes.		Coal.	
																	Heavy Guns.	Second-ary.					
		tons.	ft.	ins.	ft.	in.	ft.					£	in.	in.	in.	in.	in.	in.			knots.	tons.	
b.	Impero *	35,000	774	0	106	6	28	130,000 P.T. (G.)	Genoa (Ansaldo)	1939	Bldg.	..	10	..	..	..	..	..	9 *15-in.*, 12 *6-in.*, 12 *3·5-in.*, 40 A.A. M.G., 2 catapults, 3 aircraft	..	30	..	1600
b.	Italia (ex-Littorio §								Genoa (Ansaldo)	1937	1940												
b.	Vittorio Veneto§								Trieste	1937	1940												
b.	Andrea Doria† §	..	..		..		..	. . .	Spezia	1913	1916	..	10–4 K.S.	1¾	6 K.S.	..	9½ K.S.	6 K.S.	10 *12·5-in.*, 12 *5·3-in.*, 10 *3·5-in.*, 39 A.A. M.G., 1 catapult, 1 aircraft	..	27	2000	1074
b.	Caio Duilio † §								Castellammare	1913	1915												
b.	Conte di Cavour‡	23,622	611	6	92	0	30	75,000 (G.)	Spezia	1911	1915	..	10–4½ K.S.	1¾	6 K.S.	..	9½ K.S.	5 K.S.	10 *12·6-in.*, 12 *4·7-in.*, 8 *3·9-in.* A.A, 36 A.A. M.G., 2 catapults, 4 aircraft	..	27	2000	1200
b.	Giulio Cesare ‡ §	..	..		..		..	..	Genoa (Ansaldo)	1011	1914	..	10–4½ K.S.	1¾	6 K.S.	..	9½ K.S.	5					

* Building ceased through lack of materials. † Reconstructed 1940. ‡ Reconstructed 1937. § Under British control.

ITALY.—Cruisers, &c.

Class.	NAME.	Standard Displacement.	Length. (Extreme.)	Beam.	Draught.	Horse-Power. Type of Machinery and Boilers.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.		Armament.		Speed.	Fuel.	Complement.
											Side. / Deck.	Gun Position.	Guns.	Torpedo Tubes.		Oil.	
		tons.	ft. ins.	ft. ins.	ft. ins.					£	in.	in.			knots.	tons.	
Improved Condottieri "E" Class	Luigi di Savoia § Duca degli Abruzzi § Giuseppe Garibaldi §	7874	613 9	61 0	17	100,000 P.T. (G.)	Odero-Terni, Orlando Spezia . Cantieri Riuniti dell' Adriatico, Trieste . .	1935	1936	..	Abt. 6	..	10 *6-in.*, 8 *3·9-in.* A.A., 8 *1·5-in.* A.A., 8 M., 4 aircraft, 2 catapults. Fitted for minelaying	2 21" (T.)	35	1200	600
Attendolo Class	Eugenio di Savoia § Emanuele Filiberto, Duca d'Aosta §	7283	610 3	57 4	16 4	110,000 (G.)	Ansaldo, Genoa Orlando, Leghorn	1935	1936	..	About 4¾	..	8 *6-in.*, 6 *3·9 in.*, 8 *1·5-in.* A.A., 8 *·5-in.* M., 1 catapult, 3 aircraft. Fitted for minelaying	6 21"	36½	1200	550
Condottieri "C" Class	Raimondo Montecuccoli § Muzio Attendolo	6941	597 9	54 6	14·9	106,000 P.T.	Ansaldo, Genoa Trieste	1934	1935	.	..	..	8 *6-in.*, 6 *3·9-in.* A.A., 8 *1·5-in.* A.A., 8 *·5-in.* M., 2 aircraft, 1 catapult. Fitted for minelaying	2 21" (D.)	37	1200	520
Modified Trento Class	Bolzano . . .	10,000	646 3	67 8	18 0	150,000 (G.) A.	Ansaldo, Genoa	1932	1933	..	Abt. 3	..	8 *8-in.*, 12 *3·9-in.* A.A., 8 *1·5-in.* A.A., 8 *·5-in.* M. A.A., 1 catapult, 2 seaplanes	8 21"	36	3000	800
Condottieri Class	Luigi Cadorna § .	5008	554 6	50 10	14	95,000 (G.)	Stabilimento Tecnico Triestino, Trieste	1931	1933	..	2 / 2	..	8 *6-in.*, 6 *3·9-in.* A.A., 8 *1·5-in.* A.A., 8 *·5* M., 1 catapult, 2 seaplanes	4 21" (D.)	37 (39¾ t.)	1000	530
Zara Class	Gorizia . . .	10,000	599 9	67 7	19 6	95,000 (G.)	Odero-Terni, Orlando	1930	1931	...	About 6 / 2	..	8 *8-in.*, 12 *3·9-in.* A.A., 8 *1·5-in.* A.A., 8 *·5-in.* M. A.A., 1 catapult, 2 seaplanes	—	32	2200	800

§ Under British control.

ITALY.—Cruisers, &c.—*continued*.

Class.	NAME.	Standard Displacement.	Length. (Extreme.)	Beam.	Draught.	Horse-Power. Type of Machinery and Boilers.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour. Side. / Deck.	Armour. Gun Position.	Armament. Guns.	Armament. Torpedo Tubes.	Speed.	Fuel. Coal. / Oil.	Complement.
		tons.	ft. ins.	ft. ins.	ft.					£	in.	in.			knots.	tons.	
l. c. .	**Bari** (*ex*-German Pillau)	3248	443 11	44 7	13½	28,000 tur.	Danzig (Schichau) .	1914	1915	..	3 1½ ¾	1	8 *5·9-in.*, 3 *3-in.* A.A., 3 M., 120 mines	—	27·5	984 250	372
l. cr. .	**Taranto** (*ex*-German Strassburg)	3184	455 0	42 2	12¼	27,000 P.T. T.S.	Wilhelmshaven	1911	1914	416,340	4–2½ 2	2	7 *5·9-in.*, 2 *3-in.* A.A., 3 M., 120 mines, 1 aircraft	—	21	1200 130	373
s.c. .	**Giuseppe Miraglia** * §	4882	397 0	49 8	17	12,000 P.T.	Spezia . . .	1923	1927	..	..	..	4 *4-in.* A.A., 4 M., 2 catapults, 16 planes	—	21·5	— 440	300
cr. . .	**Ammiraglio Constanza Ciano**	8000	..	..	..	..	..	Bldg.	..	..	..	..	— *6-in.* guns	..	..	..	..
l. cr. Regolo Class	**Cornelio Silla** .	3360	444 3	44 9	13	120,000	Genoa . .	Bldg.	..	..	..	..	8 *5·3-in.*, 6 *2·5-in.*, 14 M. A.A.. carries mines	8 21″	41		
	Paolo Emilio .																
	Attilio Regolo .						Leghorn . .										
	Scipione Africano																
	Caio Mario . .						Spezia . . .										
	Claudio Tiberio .																
	Pompeo Magno § .						Ancona . .										
	Ottaviano Augusto																
	Ulpio Traiano .						Palermo . .										
	Claudio Druso .						Trigoso . .										
	Vipsanio Agrippa																
	Giulio Germanico						Naples . . .										

* *Ex*-merchant ship, taken over on the stocks. Aircraft transport.

§ Under British control.

Combined Minelayers and Minesweepers.—Fasana, Buccari, Durazzo, and Pelagosa, completed 1926, 531 tons, 10 knots (I.C. machinery), 1 *3-in.* gun, 100 mines; Azio, Legnano, Lepanto, completed 1926-7, 615 tons, 15 knots (recip.), 2 *4-in.*, 1 *3-in.*, 80 mines; Crotone, Viesti, 859 tons, 195 ft., 1,600 H.P., 14 knots, 2 *4-in.* guns, 70 mines.

Minelayers.—Laurana, Rovigno, and Albona (*ex*-Austrian), 112 tons, 11 knots, 1 *3-in.*; fourteen converted merchant vessels, 12–15 knots.

Minesweepers.—39 in number, 150 tons, 14 knots, 1 *3-in.* gun; P. Matteucci, M. Sonzini (1924), 138 ft., 620 tons, 9 knots, 2 *3-in.*; R.D.I.—57, 188 tons, 10 knots, 1 *3-in.*

Oil Transports.—Tarvisio. 10,910 tons, 11 knots, 4 *4·7-in.* 2 *3-in.*; Stige, 1,342 tons, 8 knots, 1 *4·7-in.*, 1 *3-in.*; Urano, 10,550 tons, 11 knots, 2 *4·7-in.*, 2 *3-in.*; Prometeo, 1,080 tons, 11 knots, 2 *3-in.*; Nettuno, 9,555 tons, 14 knots, 3 *4·7-in.*, 2 *3-in.*; Cocito, Lete, 1,162 tons, 10 knots, 3 *3-in.*, Cerere, 2,530 tons, 10 knots, 1 *4·7-in.*, 2 *3-in.*; Marte, 10 knots, 2 *3-in.*

River Gunboat.—E. Carlotto (1918), 180 tons, 14 knots, 2 *3-in.* A.A. guns.

Escort Gunboats.—A. Bafile, E. Giovannini (1922), 182 tons, 23 knots, 2 *4-in.* guns, 2 T.T.; Orsa, Orione, Procione, Pegaso (1938), 293 ft., 855 tons, 28 knots, 2 *3·9-in.*, 8 M.G.

Surveying Vessels.—Ammiraglio Magnaghi (1914), 1506 tons, 14 knots, 4 *3-in.*; Cariddi (1916), 330 tons, 10 knots, 1 *3-in.* gun; Cherso, 3,988 tons, 10½ knots, 4 *4·7-in.* guns.

Patrol Vessels.—Cirene (1912), 384 tons, 10 knots, 2 *3-in.*; Rimini (1912), 319 tons, 9½ knots, 1 *3-in.* gun; Gallipoli (1911), 310 tons, 10½ knots, 2 *3-in.* guns; Otranto (1911), 290 tons, 10 knots, 2 *3-in.* guns; Alula (1912), 308 tons, 13 knots, 1 *3-in.* gun; Palmaiola (1902), 472 tons, 8½ knots, 1 *3-in.*; Aurora, 935 tons, 14½ knots, 2 *2½-in.*; Illiria (1918), 654 tons, 11 knots.

Training Ships.—Cristoforo Colombo (Castellamare, 1928), 2,787 tons, 10 knots (Diesel-electric) 4 *3-in.* guns, 2 A.A. M.G.; Amerigo Vespucci (Castellamare, 1931), 3,543 tons, 1,800 H.P. (Diesel-electric), 11 knots, 4 *3-in.* A.A., 2 A.A. M.G.

Submarine Depot Ships (Sloops).—Volta and Pacinotti (1924), 2,730 tons, 19 knots, 4 *3-in.* A.A.; Sebastiano Cabota (1912), 778 tons, 13 knots, 6 *3-in.*, 4 M.

Cable Ships.—Citta di Milano (5,300 tons), 10 knots; Giasone, 1192 tons, 250 ft., 15 knots.

Tugs.—87 in number, 100–300 tons, 8–13 knots, some fitted with 1 *3-in.* gun.

Water Carriers.—Dalmazia, Istria, 2,900 tons, 10 knots, 1 *4·7-in.*, 1 *3-in.*; Flegetonte, 1,162 tons, 9 knots, 3 *3-in.* A.A.; Verde, Pagano, 1,432 tons, 9 knots, 1 *4·7-in.*, 1 *3-in* A.A.; Ticino, 2,588 tons, 9½ knots, 2 *3-in.*; Isonzo, Po, Volturno, 11½ knots, 2 *4-in.*, 4 m.g.; Scrivia, Tirso, 9½ knots, 4 m.g.; Mincio, Bormida, 645 tons, 9 knots; Sesia, Garigliano, 1,050 tons, 9½ knots, 4 M.G.; Adige (1928), 780 tons, 8 knots; Arno and Brenta (1929), 630 tons, 9 knots; Garda, Verbano, Sebeto, Metauro, Sile (1934), 592 tons, 9 knots; Frigido (1912), 398 tons, 9 knots.

Motor Torpedo Boats.—M.A.S. 423–437, 15 tons, 45 knots, 2 *18-in.* T.T., 5 depth charges; M.A.S. 438–441, 35½ tons; M.A.S. 501–516, 47 knots, 2 *18-in.* T.T., 6 depth charges; M.A.S. 517–551, 20 tons, 47 knots, 1 M.G., 2 *18-in.* T.T.; General Stefano Turr (1939), 34 knots, 2 M., 4 *18-in.* T.T.

Transport Ships.—Lussin, 3,988 tons, 10½ knots, 4 *4·7-in.*, 2 *3-in.*; Tripoli, 2,460 tons, 8½ knots; Panigaglia Vallelunga, Buffoluto (Ammunition transport ships), 916 tons, 11 knots, 2 *3·9-in.*; Enrichetta, 8,360 tons, 9½ knots.

Lighthouse Tenders.—Lante, 295 tons, 12 knots, 2 *3-in.*; Bianco, 258 tons, 11½ knots, 2 *3-in.*; Lutti, 266 tons, 12 knots, 1 *3-in.*; Levanzo, 226 tons, 11 knots, 2 *3-in.*; Scilla, 350 tons, 9 knots, 1 *3-in.*; Lido, 226 tons, 12 knots, 1 *3-in.*

Monitors.—Faa di Bruno (1917), 2,796 tons, 3·3 knots, 2 *15-in.*, 6 *3-in.*; Monte Grappa, Montello (1919), 605 tons, 7 knots, 1 *12-in.*, 2 *3-in.*; Monte Cengio, Monte Novegno (1919), 502 tons, 7 knots, 1 *12-in.*, 4 *3-in.*

Target Ship.—San Marco, Old Cruiser (wireless controlled).

Escort Vessel.—Eritrea, 2,172 tons, 20 knots, 4 *4·7-in.* guns, fitted for minelaying.

Repair Ship.—Quarnaro (1927), 7,185 tons, 11½ knots, 3 *4-in.*

Motor Vedettes.—Vigilante, Vedetta (1938). 85½ ft., 70 tons, 400 H.P. (D.) 12·3 knots, 1 *3-in.*

Yacht.—Savoia (1925), 5,280 tons, 21 knots, 4 *3-in.*

Hospital Ships.—Aquilea, Arno, California, Citta da Trapani, Cradisca, Sicilia, Tevere, Toscana, Virgilio.

Salvage Ships.—Ciclope (1903), 1,050 tons, 13·5 knots, 1 *3-in.*; Teseo (1915), 1,250 tons, 16 knots, 2 *3-in.*; Anteo (1912), 1,250 tons, 8 knots. Titano (1913), 828 tons, 14 knots, 1 *3 in.*

For Destroyers, Torpedo Boats and Submarines, see Flotilla Tables.

JAPAN.—Battleships.¶

Type	NAME	Standard Displacement.	Length. (Extreme.)		Beam.		Draught.		Horse-Power. Type of Machinery and Boilers.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.						Armament.		Speed.	Fuel.	Complement.
														Belt.	Deck.	Side above Belt.	Bulkhead.	Gun Position. Heavy Guns.	Gun Position. Second-ary.	Guns.	Torpedo Tubes.		Oil.	
		tons.	ft.	ins.	ft.	ins.	ft.	ins.						in.	in.	in	in.	in.	in.			knots.	tons.	
	I.	45,000	..		..		..		..	Kure	1939	1941	..	..	..	..	..	..	..	9 *16-in.*	..	30	..	..
	II.									Yokosuka	1941	1942												
	III.									Nagasaki	Bldg.	..												
	IV.									Kobe	Bldg.	..												
	V.									Kure	Bldg.	..												
Fuso Class	Fuso §	29,330	673	0	94	0	28	6	40,000 B.C.T. K.	Kure	1914	1915	..	12 K.S.	3	8 K.S.	..	12 K.S.	6 K.S.	12 *14-in.*, 16 *6-in.*, 8 *5-in.* A.A., 4 M., 4 L., 3 seaplanes, 1 catapult	..	22·5	4500	1300
	Yamashiro §									Yokosuka	1915	1917												
Ise Class	Hyuga *	29,990	683	0	94	0	28	8	45,000 P.T.	Nagasaki (Mitsubishi)	1917	1918	..	12 K.S.	3 K.S.	8 K.S.	..	12 K.S.	6 K.S.	12 *14-in.*, 18 *5·5-in.*, 8 *5-in.* A.A., 8 M. H.A., 3 seaplanes, 1 catapult	..	23	4500	1360
	Ise *								45,000 B.C.T. K.	Kobe (Kawasaki)	1916	1917												
Kongo Class	Kirishima ‡*	29,330	704	0	95	0	27	6	64,000 P.T. K.	Nagasaki (Mitsubishi)	1913	1915	..	8–3 K.S.	2¾	6	..	10 K.S.	6 K.S.	8 *14-in.*, 16 *6-in.*, 8 *5-in.*, A.A., 4 M., 4 L. 3 seaplanes, 1 catapult	4 (sub.) *21-in.*	26	4500	1250
	Kongo ‡*									Barrow	1912	1913	2,500,000											
	Haruna									Kobe	1913	1915												
	Hiyei †									Yokosuka	1912	1914	..											
Nagato Class	Mutsu *	32,720	700	0	95	0	30	0	80,000 (G.) K.	Yokosuka	1920	1921	..	12–9 K.S.	3½	..	..	14	..	8 *16-in.*, 20 *5·5-in.*, 8 *5-in.* A.A., 8 A.A. M.G., 3 seaplanes, 1 catapult	..	24	3400	1304
	Nagato *									Kure	1919	1920												1367 (as fleet flagship)

Armoured Cruisers now rated as Coast-defence Ships (1st class), completed 1899–1904: Kasuga, 7080 tons, 20 knots, 1 10-in., 2 8-in., 14 *6-in.*; Yakumo, 9010 tons, 16 knots, 4 8-in., 12 6-in., 5 3-in.; Adzuma, 8640 tons, 16 knots, 4 8-in., 12 6-in., 5 3-in.; Idzumo and Iwate, 9180 tons, Idzumo, 20¾ knots, Iwate, 16 knots, 4 8-in., 14 6-in., 5 3-in.; Asama, 9240 tons, 21½ knots, 4 8-in., 12 6-in., 5 3-in., used as a training ship.

* Reconstructed 1936. † Reconstructed 1939.

§ Modernised 1934.

‡ Modernised 1928–1931, including fitting of bulges and new foremast, and conversion to oil burning.

¶ U.S. claimed 2 sunk by November, 1943.

JAPAN.—Aircraft Carriers.¶

Class.	NAME.	Standard Displacement.	Length. (Extreme.)	Beam.	Draught.	Horse-Power. Type of Machinery and Boilers.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.		Armament.		Speed.	Fuel.	Complement.
											Side / Deck.	Gun Position.	Guns.	Torpedo Tubes.		Oil.	
		tons.	ft.	ft.	ft. ins.					£	in.	in.			knots.	tons.	
A.C.	Hosho (Hosyo) †	7470	510 b.p.	48 / 62	15 0	30,000 (G.) K.	Tsurumi (Asano)	1921	1922	..	..	..	4 5·5-*in.*, 2 3-*in.* A.A., 20 aircraft	—	25	2700	550
S.C.	Kamoi §	17,000	495	67	28 0	8,000 G.C.T. and electric drive	New York S.B. Co.	1922	1922 (converted 1933)	..	..	..	2 5·5-*in.*, 2 3-*in.* A.A., 15 seaplanes	—	15	4000	..
S.C.	Notoro §	14,050	455 b.p.	58	26 6	5,850 recip.	Kobe (Kawasaki)	1920	1920	..	..	..	2 4·7-*in.*, 2 3-*in.* A.A., 16 seaplanes		12	1000	155
A.C.	Ryujo †	7100	548	60' 8"	15 0	40,000 (G.)	Yokohama	1931	1933	..	..	..	12 5-*in.*, A.A., 30 aircraft	—	25	oil	600
S.C. S.C. S.C.	Chitose (Titose) Chiyoda (Tiyoda) Nisshin	9,000	577½	61' 8"	19 0	15,000 tur. & t.b. 9,000	Kure Kure Kure	1936 1937 1939	1938 1938 1941	..	..	..	6 5-*in.* A.A., 12 A.A. M.G.	—	20 20 20	..	..
S.C.	Kamikawa	..	..	..	..	..	Kobe	..	1937	..	..	..	2 3-*in.*, 10 seaplanes	—	16	..	..
A.C.	Shokaku	20,000	..	..	..	(G.)	Yokosuka	1939	1941	..	..	..	12 5-*in.*, 45 Aircraft.	—	28	..	..
A.C.	Zuikaku	20,000	..	..	..	(G.)	Yokosuka	1939	1941	..	..	..	12 5-*in.*, 45 Aircraft.	—	28	..	..

† Fitted with gyro-stabiliser.

§ Converted from oilers.

¶ U.S. claimed 6 sunk by November, 1943.

JAPAN.—Cruisers.¶

Class.	NAME.	Standard Displacement.	Length. (Extreme.)	Beam.	Draught.	Horse-Power. Type of Machinery and Boilers.	Where Built.	Date of Launch.	Date of Completion.	Cost	Armour.		Armament.		Speed.	Fuel.	Complement.
											Side. / Deck.	Gun Position.	Guns.	Torpedo Tubes.		Coal. / Oil.	
		tons.	ft.	ft.						£	in.	in.			knots.	tons.	
	I.	15,000	..	..	..	..	Mitsubishi	1940	..	..	6/	..	6 *12-in.*	..	..	..	..
	II.						Maizuru	Bldg.									
	III.						Yokosuka	Bldg.									
	IV.						Yokosuka	Bldg.									
	V.						Kure	Bldg.									
Mogami Class	Tone	8500	614 3 w.l.	63	14′7″	90,000 (G.) K.	Nagasaki	1937	1938	..	2/2	..	12 *6·1-in.*, 8 *5-in.* A.A., 4 *3-in.*, 6 M.G., 4 aircraft, 2 catapults	4 21-in, a.w. (T.)	33	..	..
	Tikuma	8450						1938	1939								
	Suzuya	8500	640	59¾	14′9″	90,000 (G.) K.	Yokosuka	1934	1936	2,500,000 estimated	2½/2	..	15 *6·1-in.*, 8 *5-in.* A.A., 4 *3-in.*, 12 M.G., 2 catapults, 4 aircraft	4 21-in. a.w. (T.)	33	..	..
	Kumano						Kawasaki	1936	1937								
Takao Class	Chokai	9850	650	62½	16¼	100,000 (G.) K.	Nagasaki	1931	1932	..	3–4/3–5	..	10 *8-in.*, 4 *4·7-in.* A.A., 8 A.A. M.G., 2 catapults, 4 seaplanes	8 21-in. a.w.	33	2000	692
	Maya						Kobe	1930									
	Atago						Kure	1930	1932								
	Takao						Yokosuka										
Nachi Class	Ashigara	10,000	640	62¼	16½	100,000 (G.)	Kobe	1928	1929	..	3–4/3–5	..	10 *8-in.*, 8 *4·7-in.* A.A., 2 M., 2 catapults, 4 seaplanes	12 21-in. a.w.	38	—/2500	750
	Haguro						Nagasaki		1929								
	Myoko						Yokosuka	1927	1929								
	Nachi						Kure		1928								
Furutaka Class	Kinugasa	7100	595	50¾	14¾	95,000 (G.)	Kawasaki, Kobe	1926	1927	..	..	..	6 *8-in.*, 4 *4·7-in.* A.A., 10 M., 2 planes, 1 catapult	12 21-in. a.w.	33	400/1400	604
	Aoba						Nagasaki	1926	1927								
	Furutaka						"	1925	1926								
	Kako						Kawasaki, Kobe	1925	1926								
Natori Class	Abukuma	5170	535	47¼	15¾	70,000 (G.)	Uraga	1923	1925	..	2/—	..	7 *5·5-in.*, 2 *3-in.* A.A., 2 M., 1 seaplane, 1 catapult, 80 mines	4 21-in. a.w. (D.)	33·0	300/1260	450
	Isudzu						Uraga	1921	1923								
	Nagara						Sasebo	1922	1922								
	Natori						Nagasaki (Mitsubishi)	1922	1922								
	Yura						Sasebo	1922	1923								
	Kinu						Kawasaki	1922	1922								

Sendai Class	Jintsu	5195	535	47¼	15¾	90,000 (G.)	Kawasaki	1923	1925	..	2 —	..	7 *5·5-in.*, 2 *3-in.* A.A., 5 M., 1 seaplane, 1 catapult, 80 mines	4 21-in. a.w. (D.)	33·0	300 1260	450
	Naka						Yokohama	1925	1925								
	Sendai						Nagasaki	1923	1924								
Kuma Class	Kiso	5100	535	47¼	15¾	70,000 (G.)	Nagasaki	1920	1921	..	2 —	..	7 *5·5-in.*, 2 *3-in.* A.A., 6 M. A.A., 1 seaplane, 80 mines	4 21-in. a.w. (D.)	33·0	300 1260	439
	Kitakami						Sasebo	1920	1921								
	Kuma						Sasebo	1919	1920								
	Oi						Kobe	1920	1921								
	Tama						Nagasaki (Mitsubishi)	1920	1921								
Tenryu Class	Tatsuta	3230	468	40¾	13	51,000 (G.)	Sasebo	1918	1919	..	..	..	4 *5·5-in.*, 1 *3-in* A.A., 2 M., fitted for minelaying, 1 seaplane	2 18-in. (T.) 2	31	— 900	332
	Tenryu						Yokosuka										
l.cr.	Kashii	6000	..	..	..	8,000	Yokohama	1940	1941	..	..	..	4 *5·5-in.*, 2 *5-in.* A.A.,	4 T.T.	18	..	..
l.cr.	Katori																
l.cr.	Kashima																
l.cr.	Ning Hai*	2500	..	..	..	..	..	..	..	..	..	..	6 *5·5-in.*, 6 *3·5-in* A.A.	4 21-in.	23	..	..
l.cr.	Ping Hai*																

MINELAYERS.—Katsuriki (1917), 1540 tons, 13 knots, 3 3-in., 150 mines; Itsukushima (Uraga, 1929), 1970 tons, 16 knots, 3000 H.P. (Diesel), 3 5·5-in., 2 3-in. A.A., 250 mines; Tokiwa, 9240 tons, 21 knots, 2 8-in., 8 6-in., 3 3-in., and 19 smaller vessels, 300—400 tons, about 12 knots, 2 3-in., 45 mines. Okinoshima (1936), 4400 tons, 9000 H.P., 20 knots, 4 5·5-in., 4 M.G.; Sirakami, Aotaka, Hatsutaka, Sokuten, Nariju, Kyosai, Kunayiri, Ishigaki (1939), 720 tons, 20 knots, 2 4·7-in.

MINESWEEPERS.—Nos. 1, 2, 3 (1923), No. 4 (1925), and Nos. 5, 6 (1929), 615 tons, 20 knots, 2 4·7-in., 1 3-in. A.A. Nos. 7—12 (1939) 630 tons, 20 knots, 3 4·7 in., 2 M. Nos. 13—14 (1933), and Nos. 15—18 (1935-36), 492 tons, 20 knots, 2 4·7-in. guns.

GUNBOATS.—Saga (1912), 685 tons, 15 knots, 1 4·7-in., 3 3-in. A.A.; Ataka (1922), 725 tons, 16 knots, 2 4·7-in., 2 3-in. A.A.; Yodo, 1320 tons, 22 knots, 2 3-in.; Uji (and others), 3 4·7-in.

RIVER GUNBOATS.—Futami (1930), Atami (1929), 170 tons, 16 knots, 1 3-in. gun; Katada, Hira, Hodzu, Seta (1923), 305 tons, 16 knots, 2 3-in. A.A.; Toba (1911), 215 tons, 15 knots, 2 3-in.; Kotaka (1930), 50 tons, 15 knots, 5 M.G.; Fushimi (1939), 320 tons, 16·5 knots, 1 3-in. A.A.

SUBMARINE DEPÔT SHIPS.—Taigei (1934), 10,000 tons, 689 feet, 13,000 H.P., 20 knots, 4 5-in. A.A.; 1 seaplane; Chogei (1924), Jingei (1923), 5160 tons, 16 knots, 4 5·5-in., 2 3-in. A.A. 1 seaplane; Komahashi (1914), 1125 tons, 13·9 knots, 2 3-in., 1 3-in. A.A.; Karasaki (1896), 9750 tons, 13 knots, 1 3-in., 1 3-in. A.A.

ANTI-SUBMARINE NETLAYERS.—Yayeyama (1932), 1135 tons, 4800 H.P. (reciprocating machinery), 20 knots, 2 4·7-in. A.A.; Shirataka (1929), 1345 tons, 16 knots, three 4·7 in. A.A. guns. Tsubame and Kamome (1929), 450 tons, 19 knots, 1 3-in. Natsushima, Sarujima and Nasami, 443 tons, 19 knots, 2 3-in. guns.

SUBMARINE CHASERS.—Nos. 1, 2, 300 tons, 24 knots, 4 M.G.; Nos. 4–13, 270 tons, 20 knots, 4 M.G.; 51–53, 170 tons, 23 knots, 4 M.G.

REPAIR SHIP AND SUBMARINE SALVAGE SHIP.—Asahi (ex-Battleship, 12,000 tons), 18 knots, 2 5-in. Repair Ship—Akashi (1939), 9000 tons, 19 knots, 4 5-in. A.A. 4 Salvage Ships. 2 Cable Ships. Transports and other auxiliaries. ICEBREAKER.—Odomari (1921), 2330 tons, 13 knots, 1 3-in. TARGET SHIP.—Settsu, 16,130 tons.

ARMED OILERS.—Takasaki and Tsurugisaki (1937), 12,000 tons, 19 knots, 4 5-in. guns. Naruto, Hayayomo, Ondo, Iro, Tsurumi, Shiriya, Sata, (1920–23), 14,050 tons, 12 knots, 2 5·5-in., 2 3-in. A.A. Sunosaki (1918), 8800 tons, 14 knots, 2 4·7 in., 2 3-in. A.A. SURVEYING SHIP.—Koshu, 2080 tons, 10·3 knots, 2 3-in.

TRAINING SHIPS.—Shikishima, 11,275 tons; Fuji, 9,179 tons.

TRANSPORTS.—Mamiya, 15,820 tons, 14 knots, 2 5·5-in., 2 3-in. A.A.; Muroto, Noshima, 8,215 tons, 12½ knots, 2 4·7-in.; Naruto, Hayatomo, Ondo, Iro, Tsurumi Shiriya, Sata, and Erimo (1920–22), 14,050 tons, 2 5·5-in., 2 3-in. A.A.

AUXILIARY SEAPLANE CARRIERS (MERCHANT SHIP CONVERSIONS).—Kagu Maru, Kamikawa Maru, Kinugasa Maru, 6,800 tons (gross), 17 knots; Takyu Maru, Yagasa Maru.

MOTOR TORPEDO BOATS.—Number unknown.

For Destroyers, Torpedo Boats and Submarines, see Flotilla Tables.

* ex-Chinese.

¶ U.S. claimed 24 Japanese cruisers sunk by November, 1943.

NETHERLANDS.*

Class.	NAME.	Standard Displacement.	Length. (Extreme.)	Beam.	Draught.	Horse-Power. Type of Machinery and Boilers.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.						Armament.		Speed.	Fuel.	Complement.
											Belt.	Deck.	Side above Belt.	Bulkhead.	Gun Position.		Guns.	Torpedo Tubes.		Coal. / Oil.	
															Heavy Guns.	Second-ary.					
		tons.	ft.	ft.	ft.					£	in.	in.	in.	in.	in.	in.			knots	tons.	
cr.	Sumatra . . .	6670	509½	52½	18	72,000 tur.	Amsterdam	1920	1926	..	3	1	1	..	4	..	10 *5·9-in.*, *6 1·5-in.*, 6 *·5-in.*, A.A., 8 M., 12 mines, 2 seaplanes	—	31	— / 1070	525
a.g.b.	Brinio . . .	530	172½	28	9¼	1500 Diesel	Amsterdam .	1912	1914	..	2 K.S.	¾	..	..	..	..	4 *4·1-in.*, 2 M.	—	14	34 / —	63
„	Gruno . . .							1913	1915												
c.d.s.	Hertog Hendrik † .	4371	317	50	19	6282 *t.* Y.	Amsterdam .	1902	1904	347,500	6 H.N.S.	2	..	..	10 H.N.S.	3 H.S.	1 *9·4-in.*, 4 *5·9-in.*, 2 *3-in.*, 6 *1-pr.*, 2 M.	—	16·5 *t*	710 / —	302
c.	Gelderland . .	3512	310	48½	17	9750 Recip Y.	Rotterdam .	1898	1900	..	4	2	..	..	..	..	8 *4·7-in.*, 4 *3-in.*, 3 *1·5-in.*, 6 M.	—	18	900 / —	325
l.cr.	Tromp . . . . Jacob van Heemskerck	3350	433	40¾	15	56,000	Amsterdam .	1937	1938	..	2	1	..	..	..	..	6 *5·9-in.* in Tromp; 10 *4-in.* in Heemskerck, 4 *1·5-in.* A.A., 4 *·5-in.*, 2 seaplanes.	6 21-in.	32½	— / 860	330

† Training ship.

MINELAYERS.—Douwe Aukes (1922), 687 tons, 13 knots, 3 3-in. A.A., 2 M., 130 mines; Medusa (1911), 593 tons, 11·5 knots, 3 3-in., 1 M., 65 mines; four old vessels, 240 tons, 7 knots, 2 1·5-in. Willen van der Zaan, 1350 tons, 15 knots, 2 4·7-in., 4 1·5-in., 4 M., 120 mines; Prins Van Oranje (1932), 1291 tons, 15 knots, 2 3-in., 2 1·5-in., 2 M., and 1 aircraft; Jan Van Brakel (1936), 1350 tons, 15 knots, 2 3-in., 1 1-pr., 4 M.

MINESWEEPERS.—I.–III., 200–235 tons; Abraham van Der Hulst, Jan van Gelder, Pieter Florisz, Abraham Crijnssen (1937), 525 tons, 15 knots, 1 3-in., 4 M.

SURVEYING VESSELS.—Eilerts de Haan (1919), 312 tons, 12 knots; Hydrograf (1911), 260 tons, 9 knots.

SUPPLY SHIP.—Zuiderkruis (1923), 2600 tons, 12½ knots.

SUBMARINE DEPOT SHIP.—Cornelius Drebbel (1915), 688 tons, 170 H.P. (Diesel), 6 knots, 1 1·5-in.

SLOOPS.—Van Kinsbergen (1939), 1760 tons, 25 knots, 4 4·7-in. guns; Flores, Soemba (1927), 1500 tons, 14½ knots, 3 5·9-in., 1 3-in., 6 M.

RIVER GUNBOATS (1877–9); Hefring, Braga, Tyr and Freyr, 244 tons, 7–8 knots, 1 4·7-in. 2 1-pr., 1 M.

POLICE AND CUSTOMS VESSELS.—Seventeen in No., armed with 2 3-in. guns, 12–20 knots, 600–1000 tons.

MOTOR TORPEDO BOATS.—*ex*-British. Number unknown.

MOTOR GUNBOATS.—*ex*-British. Number unknown.

MOTOR MINESWEEPERS.—*ex*-British. Number unknown.

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* Under the control of Germany.

For Destroyers, Torpedo Boats and Submarines, see Flotilla Tables.

NORWAY.*

Class.	NAME.	Normal Displacement.	Length. (Extreme.)	Beam.	Draught.	Horse-Power.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.						Armament.		Speed.	Fuel.	Complement.
											Belt.	Deck.	Side above Belt.	Bulkhead.	Gun Position.		Guns.	Torpedo Tubes.		Coal. Oil.	
															Heavy Guns.	Secondary.					
		tons.	ft.	ft.	ft.					£	in.	in.			in.	in.			knots.	tons.	
c.d.s.	**Thetis** (*ex*-Harald Haarfagre) . .	3858	304	48½	17⅔	4500	Elswick	1896	1898	300,000	7 H.S.	2	..	..	8 H.S.	..	2 *8·2-in.*, 6 *3-in.*	3 18-in.	16·5	550 —	249
c.d.s.	**Nymphe** (*ex*-Tordenskjold) . .	3858	304	48½	17⅔	4500	Elswick	1897	1899	300,000	7 H.S.	2	..	..	8 H.S.	..	2 *8·2-in.*, 6 *4·7-in.*, 6 *3-in.*, 2 *3-in.* A.A., 6 M.	2 (sub.) 18-in.	16·5	550 —	249

PATROL VESSELS.—Nordkapp (1937), 273 tons, 13·7 knots, 1 1·85-in.; Heimdal (1892), 660 tons, 12 knots, four 12-pr.

MINELAYERS.—Glommen and Laugen (1918), 335 tons, 9½ knots, 2 3-in. M., 50 mines; old gunboats, refitted as minelayers: Tyr, Gor, Vidar, Brage, Nor, Vale, and Uller, 230–280 tons, armed with one 4·7-in. and other guns. Albatros (*ex*-Olav Trygrason), minelayer and training ship, built at Horten, 1747 tons, 21½ knots, 6000 H.P., 4 4·7-in. and 1 3-in. A.A. guns, and 2 T.T.S. (18-in.), 280 mines.

MINESWEEPERS.—Rama and Otra (1940), 360 tons, 13·5 knots, 1 1·5-in., 2 M.

MOTOR TORPEDO BOATS.—*ex*-British. Number unknown.

CORVETTES, WHALERS, ETC.—*ex*-British. Number unknown.

For Destroyers, Torpedo Boats and Submarines, see Flotilla Tables.

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* Under the control of Germany.

SOVIET UNION.—Battleships.

Class.	NAME.	Normal Displacement.	Length. (Extreme).	Beam.	Draught.	Horse-Power.	Where Built.	Makers of Engines.	Date of Launch.	Date of Completion.	Cost.	Armour.						Armament.		Speed.	Fuel.	Complement.
												Belt.	Deck.	Side above Belt.	Bulkhead.	Gun Position. Heavy Guns.	Gun Position. Second-ary.	Guns.	Torpedo Tubes.		Coal. Oil.	
		tons.	ft.	ft.	ft.							in.	in.	in.	in.	in.	in.			knots.	tons	
b.	Parizhskaya Kommuna (*ex*-Sevastopol) †	23,000	594	87	27½	42,000 P.T.	Baltic Works	Baltic Works	1911	1915	..	9–5	3	..	..	12–10	6	12 *12-in.*, 16 *4·7 in.*, 10 *3-in.* A.A., 8 M., *and smaller*, 2 seaplanes	4 (sub.) 18-in.	23	2000 1000	1125
b.	Oktyabrskya Revolyutsiya (*ex*-Gangut)‖	23,000	594	87	27½																	
b.	Marat (*ex*-Petropavlovsk) *	23,606	594	87	31																	
b.	Mikhail Frunze	23,000	594	87	27½																	
b.	I.	40,000	800	110	30				Blg.									9 *16-in.*, 12 *6-in.*		30		
b.	II.																					
b.	III.																					

† Modernised, 1937.

‖ Modernised, 1933

* Modernised 1931.

Seaplane Carrier.

Stalin (building), 12,000 tons, 30 knots, 22 aircraft.

SOVIET UNION.—Cruisers.

Class.	NAME.	Normal Displacement.	Length. (Extreme.)	Beam.	Draught.	Horse-Power.	Where built.	Date of Launch.	Date of Completion.	Cost.	Armour.		Armament.		Speed.	Fuel.	Complement.
											Belt./Deck.	Gun Position.	Guns.	Torpedo Tubes.		Coal/Oil	
		tons.	ft.	ft	ft.					£	in.	in.			knots.	tons.	
cr.	**Aurora** †	6730	416	55	21	11,600	Petrograd	1900	1903	..	..	..	10 *5·1-in.*, 5 *6-pr.* A.A., 2 M., 125 mines	2	18	964/—	573
m. cr.	**Marti**	3500	410	..	..	G. Tur.	..	..	1936	..	2	..	4 *5·1-in.*, 3 *3-in.* A.A., 300 mines	..	25	..	..
cr.	**Komintern** † (*ex*-Pamyat Merkuriya)	6675	440	54½	20½	19,500	Nikolaev	1903	1907	..	..	..	10 *5·1-in.*, 8 *3-in.* A.A., 1 aircraft	2 (sub.)	23	1190/—	595
”	**Krasni Kavkaz** (*ex*-Ad. Lazarev)	7600	535	51½	19	60,000	Nikolaev	1916	1930	..	3/1	3	4 *7·1-in.*, 4 *3-in.* A.A., 4 *4-in.* A.A., 4 M., 100 mines, 2 seaplanes	(a.w.)	29½	540/690	650
”	**Krasny Krym** (*ex*-Profintern)	7200	520	50⅓	18½	55,000 P.T.(Y.)	Reval	1915	1925	..	3/1	3	15 *5·1-in.*, 4 *4-in.* A.A., 4 *3-in.*, 4 M., 2 aircraft, 100 mines	12 *21-in.*	29½	540/690	630
”	**Kirov**	7725	613½	58	18	105,000	Leningrad	1936	1937	..	3/2	..	9 *7·1-in.*, 4 *4-in.*, 4 *1·5-in.* A.A., 2 aircraft	6 *21-in.*	34	..	624
”	**Maxim Gorki**							1937	1939								
”	**Ordzhonikidze**							1938	1941								
”	**Kuibishev**							1939	Bldg.								
cr.	THREE IN NUMBER	..	..	..	..	G. Tur.	..	Bldg.	..	..	..	..	*7·1-in.* guns	..	..	..	..

GUNBOATS.—Krazni Vostok, Sun Yat Sen, Lenin, Chicherin, (1910), 950 tons, 11 knots, 1 6-in., 1 3-in.; Bednota, Krasnoe-Znamya, Rabochi, Proletarri, Krasni Buryat, Krasni Mongol, Krasni Moryak (1907), 11 knots, 190 tons, 2 4·7-in.; Krasni Azerbaidzhan, Lenin (1909), 640 tons, 12 knots, 2 4-in., 2 3-in.; Krasni Adzharistan, Krasni Krim, Krasnaya Gruziya, Krasnaya Abkhazia (1906), 1,100 tons, 9 knots, 2 5·1-in., fitted for minelaying; Altvater, Bakinsky Rabotchi, Markin (1905), 710 tons, 25 knots, 3 4-in., 2 M.; Krasnaya Zvezdo (1906), 1,300 tons.; Krasnoe Znamya (1895), 1,500 tons, 5 5-in., 2 3-in.; Karjala (1918), *ex*-Finnish, 350 tons, 14 knots, 2 3-in.; Yrjo and Aunus (*ex*-Finnish).

MINELAYERS.—25 Oktyabrya (1873), 4,500 tons, 11 knots, 4 3-in., 600 mines; Sourop, Ristna (1905), 450 tons, 12 knots, 1 3-in.; Marti, 12 others.

MINESWEEPERS.—Mikula, Iskra, 500 tons, 1 3-in.; Zapal, Zmei, Kluz (1911), 180 tons, 11 knots, 1 3-in.; Djalita (1926), 359 tons, 10 knots, 2 3-in.; Dorotea (1924), 443 tons, 10 knots, 2 3 -in.; Udarnick (1917), 185 tons, 10 knots, 1 3-in.; Nos. I–VI (1935), 400 tons, 16 knots, 1 4-in., 1 M.G.; Lahna and Kuore (1937), *ex*-Finnish, 16 tons, 10 knots; Fugas, Kapsul Paravan, Podsekatez, Provodnik, Strela, Patron, and others (1933–40), 500 tons, 16 knots, 1 4-in., 1 1·7-in.

OILERS.—Gornjak (1898), 1,576 tons, 12 knots; Zheleznodorozhnik, 2,000 tons, 10 knots; 16 others.

ICE-BREAKERS.—Josef Stalin, Kaganovitch, A. Mikojan (1938–40), 11,000 tons, 15 knots, 3 seaplanes.; Lenin, 5,700 tons, 19 knots; Krassin (1917), 10,000 tons, 15 knots; Sadko (1913), 1,616 tons, 14 knots.; Maligin (1912), 1,535 tons; Sedov, Rusamov, Sibiryakov (1909), 1,140 tons, 12 knots.; Truvor (1896), 1,450 tons, 13 knots; Davidov, 1,525 tons, 15 knots; Dobriniya Nikititch (1916), 1,664 tons; Feodort Litke (1909), 3,000 tons, 17 knots; V. Molotov (building); S. Makarov (1916), 4,000 tons, 14 knots; Yermak (1898), 8,000 tons, 14 knots; 30 others.

DEPOT SHIPS.—Krasni Gorn (1911), 1,892 tons, 11 knots; Serp-I-Molot (1900), 6,000 tons, 11 knots.; Smolni, 3,200 tons, 10 knots; Kommuna (1913), 2,400 tons, 10 knots; Sovietskaya Rossiya, 5,200 tons, 12 knots; Oka (1914), 1,982 tons, 10 knots.

TRAINING SHIPS.—Svir, 10,000 tons gross, 15 knots; Martinov, Osovaiakhim, Artemev, Kursant, Ucheba, Praktika (1907), 300 tons; Komsomolets (1902), 11,000 tons, 18 knots, 4 3-in.; Amur, 3,000 tons, 13 knots, 1 4·7-in.; Leningrad Soviet (1895), 1,300 tons, 10 knots.

GUARDSHIPS.—Razvedchik (1904), 100 tons, 16 knots, 2 3-pr.; Dzerzhinski, Kirov (1934), 800 tons, 20 knots, 2 4-in., 4 1·5-in. A.A.; Five vessels, 200 tons, 16 knots, 1 4·7-in. Eight vessels, 350 tons, 20 knots, 1 4·7-in.

MOTOR-TORPEDO BOATS.—About 200, 10–26 tons.

WATERTANKERS.—Vodolez I and II, 660 tons, 9½ knots, 3 others.

SURVEYING VESSELS.—Hidrografs (*ex*-Latvian), Okean, Okhotsh, Astronom, Zenit, Azimut and 24 others.

PATROL VESSELS.—Khorek, Kunitsa, Laska, Vidra (1936–37), 180 tons, 12 knots, 2 3-in.; 40 others.

6 HOSPITAL SHIPS.

2 FISHERY PROTECTION VESSELS.

5 SALVAGE VESSELS.

† Training ship.

For Flotilla Leaders, Destroyers, Guardships and Submarines, see Flotilla Tables.

SPAIN.

Class.	NAME.	Standard Displacement.	Length. (Extreme.)	Beam.	Draught.	Horse-Power. Type of Machinery and Boilers.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour. Side. / Deck.	Armour. Gun Position.	Armament. Guns.	Armament. Torpedo Tubes.	Speed.	Fuel. Coal. / Oil.	Complement.
		tons.	ft.	ft.	ft.					£	ins.	ins.			knots.	tons.	
cr.	**Canarias**	10,000	636	64	17·4	90,000 P.T.(G.) Y.	Ferrol	1931	1934	..	4 / 3	1	8 *8-in.*, 8 *4·7-in.* A.A., 8 *2-pr.* A.A., 2 seaplanes; 1 catapult	4 21-in. (T.)	33·0	— / 2750	765
„	**Miguel de Cervantes**	7475	579½	54	16½	80,000 P.T.(G.) Y.	Ferrol	1928	1930	..	3 / 1	..	8 *6-in.*, 4 *4-in.* A.A., 2 *3-pr.*, 1 M.	4 21-in. (T.)	33·0	— / 1680	560
„	**Almirante Cervera**							1925	1928								
„	**Galicia**, *ex*-**Libertad** (*ex*-Principe Alfonso)							1925	1927								
„	***Navarra**, *ex*-**Republica** (*ex*-Reina Victoria Eugenia)	4857	462	50	15¾	25,500 P.T.	Ferrol	1920	1923	..	3–1½ / 1½	3	4 *8·5-in.* A.A., 4 M., 1 L.	4 21-in.	25·5	1200 / 230	404
„	**Mendez Nuñez**	4509	462	46	14½	45,000 (G.)	Ferrol	1922	1924	..	3 / 1	..	6 *6-in.*, 4 *1·9-in.* A.A., 4 M.	4 21-in. (T.)	29	800 / 500	320
g.b.	**Dato**	1314 (normal)	251½	33½	11¼	1700 tur.	Ferrol	1923	1925	..	..	..	4 *4-in.*, 2 *1·9-in.* A.A., 2 M	..	15	324 / —	220
„	**Canalejas**							1922	1924								
„	**Canovas Del Castillo**							1922	1923								
„	**Calvo Sotelo**	1600	282	39½	11	6500 tur.	Cadiz	1934	1938	..	..	..	4 *4·7-in.*, 4 *·5-in.* A.A. M.	..	20	..	140

* Training ship.

Sailing Training Ships.—Juan Sebastian de Elcano (1928), 3500 tons, 800 H.P. (Diesel), 9·5 knots, 4 2·4-in.; Galatea (*ex*-Clarastella) (1903), 2710 tons, 8½ knots, 4 2·24-in. Training Ships.—Virgen de La Caribad, Contramaestre Castello.

Oiler.—Pluton, 7000 tons, 13 knots. Two building. Survey Vessels.—Tofino, Malaspina, 1200 tons, 12 knots, 2 4-in.; Artabro, Castor.

Armed Trawlers.—Alcazar, Larache and Tetuan, 400 tons, 10 knots, 1 3-in. (also 2 3-pr. in Alcazar); Arcila, 510 tons, 10½ knots, 2 3-in.; Uad Martin, 420 tons, 10 knots, 1 3-in.; Uad Quert, Xauen, 650 tons, 10½ knots, 1 3-in.; Virgen de Begona.

Fishery Protection Vessels.—8 in number, 150 tons, 11 knots, 1 6-pr. Patrol Vessels.—I2, 4, and 6.

Minelayers.—Jupiter, Marte, Neptuno, Vulcano, 2100 tons, 18½ knots, 4 4·7-in. A.A., 4 1·6-A.A., 4 M.G., 264 mines, 2 depth charge release gears; Eolo, Triton, 1700 tons, 18·5 knots, 4 4-in., 4 1·5-in., 4 M.G., 100 mines. Transport.—Contramaestre Casado, 7275 tons, 10½ knots, 4 1·6-in.

Tugs.—R.R.12 (*ex*-Cartagenero), Ferrolano, R.R.14 (*ex*-Gaditano), 300 tons, 10 knots, 1 6-pr.; R.R.11 (*ex*-Galicia), 350 tons, 10 knots, 1 3-in.; R.A.1 (*ex*-Ciclope), 800 tons, 12 knots, 1 3-in.

Three coastguard patrol vessels, 250 tons, ordered and four oilers building. Motor Torpedo Boats.—Twenty in number. M.A.S. Boats.—Fourteen in number.

For Destroyers, Torpedo Boats and Submarines, see Flotilla Tables.

SWEDEN.

Class.	NAME.	Standard Displacement.	Length. (Extreme.)	Beam.	Draught.	Horse-Power. Type of Machinery and Boilers.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour. Belt	Armour. Deck.	Armour. Side above Belt.	Armour. Bulkhead.	Armour. Gun Position. Heavy Guns.	Armour. Gun Position. Second-ary.	Armament. Guns.	Armament. Torpedo Tubes.	Speed.	Fuel Coal. / Oil.	Complement.
		tons.	ft.	ft.	ft.					£	in.	in.	in.	in.	in.	in			knots.	tons.	
c.d.s.	Two in number	8000	436	64	10¾	..	..	Bldg.	..	..	..	..	..	..	..	..	4 *10-in.*, 6 *4·7-in.*, 8 *1·5-in.* A.A	..	22	..	..
l.c.	Tre Kroner Gota Lejon	7000	..	..	..	..	.	Bldg.	..	..	..	..	..	..	..	..	.. ..	..	..	..	590
,,	Aran	3361	287	49¼	16·7	7000 Y. *t*	Gothenburg	1901	1902	..	7 K.S.	1⅞	..	..	7½ K.S.	5 K.S.	2 *8·3-in.*, 6 *5·9-in.*, 10 *6-pr.*, 1 *1-pr.*	2 sub. 18-in.	17·2 *t*	300 / —	287
,,	Drottning-Victoria *	7100	396·7	61	21½	22,000 (G). Y.	Gothenburg	1917	1921	666,000	8–6 K.S.	1½	4 H.S.	..	8 K.S.	5 K.S.	4 *11-in.*, 8 *5·9-in.*, 4 *3-in.*, 2 *6-pr.*, 6 M.	—	23·0	690 / 98	450
l. cr.	Fylgia	4200	378	48·6	20·6	12,444 Y. *t*	Stockholm	1905	1907	385,700	4 K.S.	2	..	..	5 K.S.	5 K.S.	8 *5·9-in.*, 4 *2·2-in.*, 4 *1·5-in.*	2 sub. 18-in.	22·7 *t*	900 / —	328
Hangar Cruiser	Gotland	4700	442	50·6	14·7	39,000 (G.)	Gothenburg	1933	1934	910,000 (estimated)	..	..	..	..	..	..	6 *6-in.*, 4 *3-in.* A.A., 4 M., 100 mines, 11 seaplanes, 1 catapult. 100 mines	6 21-in.	27·0	oil	453
c.d.s.	Gustav V.*	7100	396·7	61	21½	22,000 (G.) Y.	Malmö	1918	1922	666,000	8–6 K.S.	1½	4 H.S.	..	8 K.S.	5 K.S.	4 *11-in.* 8 *5·9-in.*, 4 *3-in.* A.A., 2 *6-pr.*, 6 M.	—	23·0	690 / 98	450
,,	Manligheten	3361	287	49¼	17·4	7400 Y.	Malmö	1903	1904	..	7 K.S.	1⅞	..	..	7½ K.S.	5 K.S.	2 *8·3-in.*, 6 *5·9-in.*, 8 *6-pr.*, 1 *1-pr.*	2 sub. 18-in.	17·0	300 / —	300
,,	Oscar II.*	4250	313·6	50·5	18	9000 Y.	Gothenburg	1905	1907	..	6 K.S.	2	6 K.S.	6 K.S.	7½ K.S.	5 K.S.	2 *8·3-in.*, 6 *5·9-in.*, 8 *6-pr.*, 1 *1-pr.*	2 sub. 18-in.	18·0	500 / —	330
,,	Sverige *	6899	392·7	61	21½	20,000 tur. Y.	Gothenburg	1915	1917	666,000	8–6 K S.	1½	4 K.S.	..	8 K.S.	5 K.S.	4 *11-in.*, 8 *5·9-in.*, 4 *3-in.*, 2 *6-pr.*, 6 M.	—	22·5	690 / 98	450
,,	Tapperheten	3361	287	49¼	17·7	6000 Y.	Malmö	1901	1903	..	7 K.S.	1⅞	..	..	7½ K.S.	5 K.S.	2 *8·3-in.*, 6 *5·9-in.*, 10 *6-pr.*, 1 *1-pr.*	2 sub. 21-in.	16·5	300 / —	287

MINELAYER.—Clas Fleming, 1570 tons, 4 4·7-in., 4 M., 20 knots, 200 mines. DEPOT SHIPS FOR SUBMARINES.—1 building, 2000 tons. Patricia (1926), 3000 tons, 14 knots.

ICEBREAKERS.—Atle, 1720 tons, 16 knots, 2 2·2-in.; Ymer, 3450 tons, 18 knots, 4 3-in. Three building.

AIRCRAFT DEPOT SHIP.—Dristigheten (1901), 3218 tons, 16 knots, 4 3-in., 3 aircraft.

DEPOT SHIPS.—Niord (1898), 3297 tons; Göta, 3350 tons. Jacob Bagge, Örnen 738 tons, 20 knots, 2 4·7-in., 2 2·2-in.

SAILING TRAINING SHIPS.—Af. Chapman (1888), Falken (1877), Najaden and Jarramas (1900), 350 tons. TRAINING SHIPS.—Svea and Falken.

VEDETTE BOATS (used for minelaying and minesweeping).—Kaparen, Jagaren, Snapphanen, Vaktaren, 290 tons, 24 knots, 2 3-in., 2 1-in. A.A. Altair, Argo, Astrea, Antares, Arcturus, Iris, Perseus, Polaris, Regulus, Rigel, Spica, Thetis, Vega, Vesta (1908–11), 105 tons, 20 knots, 2 2·2-in., 1 18-in. T.T.; Castor, Pollux (1909), 105 tons, 20 knots, 2 1·5-in., 1 18-in. T.T.; No. 19 (1914), 55 tons, 10 knots; Nos. 27, 28, 30, 33, 34, 35, 36 (1900), 50 tons, 17 knots, 2 1·5-in., 1 15-in. T.T. Nos. 5–9 (1907), 50 tons, 11 knots 1 1·5-in., 2 18-in. T.T. SALVAGE VESSEL.—Belos. TENDERS.—Sokaren, Sveparen, Sprangaren, 160 tons, 10 knots 1 6-pr.

MOTOR TORPEDO BOATS.—Nos. 3 and 4, 55 ft., 11 tons, 900 H.P., 41 knots, 1 M., 2 18-in. T.T. T 11, 12, 13, 14 (*ex*-Italian), 20 tons, 47 knots, 2 T.T.; T 15–22 (1941), 34 tons, 2 T.T.

MINESWEEPERS.—Starkodder, Styrbjorn, 350 tons, 15 knots, 2 1·5-in.; M. 1 and 2, 60 tons, 16½ knots, 2 M.G.; Holmon, Vinga, Ven, Ramskar, Kullen, Arholma, Landsort (1939–40), 370 tons, 17½ knots, 2 3-in. 1 M.G. Bremon, Holmon, Gronskar, Koster, Kullen, Ven, Vinga, Ulvon (1941), 17 knots, 2 4·3-in., 1 1-in. A.A.

SURVEYING VESSELS.—Gustaf Af Flint, Kompass, Johan Nordenanckar, Peter Gedda, Ejdern, Falken, Svalan.

OILERS.—Brannaren (1933), 1,082 tons 10 knots. Olsaren and Eldaren. For Destroyers and Submarines, see Page 239.

* Reconstructed and modernised (1929–39).

UNITED STATES.—Battleships.

Class.	NAME	Standard Displacement.	Length. (Extreme.)	Beam.	Draught.	Horse-Power. Type of Machinery and Boilers.	Where Built.	Date of Launch.	Date of Completion.	Cost. §	Armour.						Armament.		Speed.	Fuel.	Complement.
											Belt.	Deck.	Side above Belt.	Bulkhead.	Gun Position.		Guns	Torpedo Tubes.		Oil.	
															Heavy Guns.	Second-ary.					
		tons.	ft.	ft.	ft.					£	in.	in.	in.	in.	in.	in.			knots.	tons.	
b.	**Montana** .	58,000	..	..	..	..	Philadelphia	Blg.	..	..	..	..	..	..	..	..	*16-in.* guns.	..	..	..	..
b.	**Ohio** .						Philadelphia	Blg.													
b.	**Maine** .						New York (Navy Yard)	Blg.													
b.	**New Hampshire**						New York (Navy Yard)	Blg.													
b.	**Louisiana**						Norfolk (Navy Yard)	Blg.													
b.	**Illinois** .	45,000	880	108	36	C.T. (G.)	Philadelphia	Blg.		100,000,000	..	.	..	..	..	..	9 *16-in.* guns, 20 *5-in.*	..	30	..	..
b.	**Kentucky**						Norfolk	Blg.													
	Iowa .						New York (Navy Yard)	1942	1943												
b.	**New Jersey**						Philadelphia	1942	1943												
b.	**Missouri**						New York (Navy Yard)	Blg													
b.	**Wisconsin**						Philadelphia (Navy Yard)	Blg.													
b.	**Washington**	35,000	750	108	28	115,000 tur.	Philadelphia (Navy Yard)	1940	1941	17,500,000	..	..	..	..	..	..	9 *16-in.* guns, 20 *5-in.*, 16 smaller, 3 aircraft, 2 catapults	..	30	..	..
b.	**North Carolina** .						New York (Navy Yard)	1940	1941												
b	**Indiana**						Newport News	1941	..												
b.	**Massachusetts**						Bethlehem (S.B. Co.)		..												
b.	**Alabama**						Norfolk (Navy Yard)	1942	..												
b.	**South Dakota**						New York (S.B. Co.)	1941	1942												
b.	**Arkansas** * .	26,100	562	106	26	30,000 P. tur.	New York (S.B. Co.)	1911	1912	964,000	11–5 K.S.	3	..	8–6 K.S.	11 K.S.	6½	12 *12-in.* (50 cal.), 16 *5-in.* (51 cal.), 8 *3-in.* (50 cal.) A.A., 2 *3-pr.*, 8 M., 1 catapult, 3 float-planes	—	20·5	5100	670

b.	**California** .	32,600	624	97½	30½	26,800 tur. electric drive	Mare Island (Navy Yard)	1919	1921	2,620,000	14–8 K.S.	3	..	..	18 K.S.	..	12 *14-in.* (50 cal.), 12 *5-in.* (51 cal.), 8 *5-in.* (25 cal.) A.A., 2 *6-pr.*, 8 M., 2 catapults, 3 floatplanes	—	21	4656	1230
b.	**Colorado.** .	32,500	624	97½	30½	27,300 B. & W. tur. electric drive	New York (S.B. Co.)	1921	1923	1,383,000	13½–12 K.S.	..	..	..	18 K.S.	..	8 *16-in.* (45 cal.), 12 *5-in.* (51 cal.), 8 *5-in.* (25 cal.) A.A., 2 *6-pr.*, 2 *1-pr.*, 8 M., 2 catapults, 3 floatplanes	2 (sub.) 21-in.	21·0	4570	1230
b.	**Idaho** ‡ .	33,400	624	106¼	29½	40,000 B. & W. P.T.	New York (S.B. Co.)	1917	1919	1,485,000	14 K.S.	3	..	..	18 K.S.	..	12 *14-in.* (50 cal.), 12 *5-in.* (51 cal.), 8 *5-in.* A.A., 2 *3-pr.*, 8 M., 2 L., 2 catapults, 3 floatplanes	..	21¼	3271	1130
b.	**Maryland** .	31,500	624	97½	29⅝	27,300 B. & W. tur. (G.) and electric drive	Newport News	1920	1921	1,383,000	13½–12 K.S.	..	..	..	18 K.S.	..	8 *16-in.* (45 cal.), 12 *5-in.* (51 cal.), 8 *5-in.* (25 cal.) A.A., 2 *6-pr.*, 8 M., 2 catapults, 3 floatplanes	2 (sub.) 21-in.	21	4570	1230
b.	**Mississippi** ‡ .	33,000	624	106¼	29¼	40,000 B. & W. C.T. (G.)	Newport News	1917	1917	1,485,000	14 K.S.	3	..	..	18 K.S.	..	12 *14-in.* (50 cal.), 12 *5-in.* (51 cal.), 8 *5-in.* A.A., 2 *6-pr.*, 8 M., 2 catapults, 3 floatplanes	..	21	3271	1130

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* Modernised 1926. Used as training ship.

‡ Modernised, 1934.

§ The sums given in this column are exclusive of the cost of armour and armament according to the system of making appropriations in the estimates.

UNITED STATES.—Battleships—*continued.*

Class.	NAME.	Standard Displacement.	Length. (Extreme.)	Beam.	Draught.	Horse Power. Type of Machinery and Boilers.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.						Armament.		Speed.	Fuel.	Complement.
															Gun Position.						
											Belt.	Deck.	Side above Belt.	Bulkhead.	Heavy Guns.	Second-ary.	Guns.	Torpedo Tubes.		Oil.	
		tons.	ft.	ft.	ft.					£	in.	in.	in.	in.	in.	in.			knots.	tons.	
b.	**Nevada** § .	29,000	583	108	27½	25,000 Y. P. tur.	Quincy, Mass. (Fore River)	1914	1916	1,211,842	13½–8 K.S	1½–3	..	13½ K.S.	18–16 K.S.	..	10 *14-in.* (45 cal.), 12 *5-in.* (51 cal.), 8 *5-in.* (25 cal.) A.A., 2 *6-pr.*, 8 M., 2 L., 2 catapults, 3 floatplanes	—	20·5	2000	1100
b.	**New Mexico** ‡	33,400	624	106¼	29½	40,000 B. & W. Electric drive	New York . (Navy Yard)	1917	1918	1,485,000	14 K.S.	3	..	..	18 K.S.	..	12 *14-in.* (50 cal.), 12 *5-in.* (51 cal.). 8 *5-in.* A.A., 2 *6-pr.*, 8 M., 2 catapults, 3 floatplanes	—	21·5	3271	1140
b.	**New York** * .	27,000	573	106	26	28,100 B. & W. recip.	New York . (Navy Yard)	1912	1914	1,315,114	12–4 K.S.	3	9 K.S.	10 K.S.	14–8 K.S.	6 K.S.	10 *14-in.* (45 cal.), 16 *5-in.* (51 cal.), 8 *3-in.* (50 cal.) A.A., 2 *3-pr.*, 8 M., 1 catapult, 3 floatplanes	—	21·0	5200	1230
b.	**Oklahoma** § .	29,000	583	108	28½	25,300 B. & W. recip.	New York . (S.B. Co.)	1914	1916	2,200,000	13½–8 K.S.	1½–3	..	13½ K.S.	18–16 K.S.	..	10 *14-in.* (45 cal.), 12 *5-in.* (51 cal.), 8 *5-in.* (25 cal.) A.A., 2 *3-pr.*, 8 M., 2 catapults, 3 floatplanes	—	20·5	2000	1130
b.	**Pennsylvania** †	33,100	608	106¼	28	40,000 B. & W. Cur. tur.	Newport News	1915	1916	1,485,000	14 K.S.	3	..	..	18 K.S.	..	12 *14-in.* (45 cal.), 12 *5-in.* (51 cal.), 8 *5-in.* (25 cal.) A.A., 2 *3-pr.*, 8 M., 2 catapults, 3 floatplanes	—	21·0	2300	1130

b.	**Tennessee** . .	32,300	624	97½	30½	26,800 B. & W. Tur. electric drive.	New York (Navy Yard)	1919	1920	2,620,000	14–8 K.S.	3	..	..	18 K.S.	..	12 *14-in.* (50 cal.), 12 *5-in.* (51 cal.), 8 *5-in.* (25 cal.) A.A., 2 *6-pr.*, 2 *1-pr.*, 8 M., 2 catapults, 3 floatplanes	2 (sub.) 21-in.	21·0	4656	1230
b.	**Texas*** . .	27,000	573	106	26	28,100 recip.	Newport News	1912	1914	1,166,000	12–4 K.S.	3	9 K.S.	10 K.S.	14–8 K.S.	6 K.S.	10 *14-in.* (45 cal.), 16 *5-in.* (51 cal.), 8 *3-in.* (50 cal.) A.A., 2 *3-pr.*, 8 M., 1 catapult, 3 floatplanes	—	21·0	5200	670
b.	**West Virginia**	31,800	624	97½	30	27,300 B. & W. tur. electric drive.	Newport News	1921	1923	1,383,000	13½–1 K.S.	..	..	..	18 K.S.	..	8 *16-in.* (45 cal.), 12 *5-in.* (51 cal.), 8 *5-in.* (25 cal.) A.A., 2 *6-pr.*, 2 *1-pr.*, 8 M., 2 catapults, 3 floatplanes	2 (sub.) 21-in.	21·0	4570	1230
b.c. „ „ „ „ „	**Alaska** . **Guam** . **Hawaii** ‖ . **Philippines** ‖ **Puerto Rico** ‖ **Samoa** ‖ .	27,000	..	..	..	tur.	New York S.B. Co.	Blg.	..	..	..	..	..	..	..	..	..	..	35	..	

The battleship Wyoming was converted to a training ship (speed 18 knots) in 1931 in accordance with London Naval Treaty.

* Modernised in 1927. Modernisation included fitting of bulge protection, protection of decks against aerial attack, conversion to oil burning, installation of 3-in. A.A. battery, and addition of catapults. Cost about £600,000 each ship. Displacement increased about 3000 tons.

† Modernised in 1931. Modernisation included fitting bulges, reboilering, increasing elevation of turret guns, replacing former anti-aircraft batteries by 5-inch A.A. guns, new masts and new fire control.

‡ Taken in hand for modernisation 1931. New Mexico and Mississippi completed 1933. Idaho completed 1934. Modernisation includes fitting increased deck protection, increasing elevation of turret guns, installation of eight 5-in. A.A. guns, reboilering, fitting of new turbines (the electric drive in New Mexico has been replaced by turbine machinery), alterations to masts and bridges, and fitting of bulges.

§ Modernisation in 1929. Alterations include fitting of bulges, deck protection, tripod masts, increasing elevation of turret guns, fitting a new 5-in. anti-aircraft battery. Oklahoma capsized during Japanese attack on Pearl Harbour, 7th Dec. 1941; reported to be repairable. The modernisation of California, West Virginia, Colorado, Maryland, and Tennessee is projected. ‖ Building probably suspended.

UNITED STATES.—Aircraft Carriers.

Class.	NAME.	Standard Displacement.	Length. (Extreme.)	Beam.	Draught.	Horse-Power. Type of Machinery and Boilers.	Where Built.	Date of Launch.	Date of Completion.	Cost.	Armour.		Armament.		Speed.	Fuel.	Complement.
											Deck.	Belt.	Guns.	Torpedo Tubes.		Oil.	
		tons.	ft.	ft.	ft.					£	in.	in.			knots.	tons.	
A.C.	I	45,000	..	..	..	..	Newport News										
A.C.	II	45,900	..	..	..	..											
A.C.	III	45,000	..	..	..	..	Brooklyn Navy Yard										
A.C.	San Jacinto (*ex-*Reprisal)	..	..	..	..	..	N.Y. Shipbdg.Co., Camden, New Jersey	..	Late ‖ 1943	..	..	..	..	..	..	..	..
A.C.	Hornet	..	..	..	..	..	..	Bldg.	..	..	..	..	..	..	..	..	..
A.C.	Shangri-La	..	..	..	..	..	Portsmouth Navy Yard	Bldg.	..	..	..	..	..	..	..	..	..
A.C.	Randolph						Newp't News	Bldg.			..	..					
A.C.	Yorktown						S. B. Co.	1943	1943	..	..	..					
A.C.	Essex	27,000											..	..	..	..	..
A.C.	Bon Homme Richard	..	..	..	..	..	Newport News S. B. Co.	Bldg.	1942	..	..	..					
A.C.	Intrepid							Bldg.									
A.C.	Kearsage							Bldg.	..	..	..	..					
A.C.	Franklin	..	..	..	..	..	..	Bldg.					16 5-*in.*				
A.C.	Hancock	..	..	..	..	..	..	1943						..	..	..	..
A.C.	Lexington (*ex-*Cabot	..	..	..	..	..	Bethlehem Steel, Fore River	Bldg.	1943	..	..	..					
A.C.	Bunker Hill							1942	1943								
A.C.	Oriskany	..	..	..	..	..	..	Bldg.									
A.C.	Ticonderoga	..	..	..	..	..	..	Bldg.									
A.C.	Enterprise	19,800	802	83	21¾	120,000 (G.) B. & W.	Newport News	1936	–.5.38	..	..	..	8 5-*in.* A.A. guns, 16 1·1-*in.* M. A.A., 76 aircraft. 1 catapult	—	34		1200
A.C.	Ranger	14,500	769	80	19⅔	53,500 (G.)	Newp't News S. B. Co.	1933	1934	about 4,000,000	1	..	8 5-*in.* A.A., 50 M.G., 76 aircraft	—	29¼		1434
A.C.	Saratoga	33,000	888	105½	31	180,000 tur.electric (W. F.)	N.Y. Shipbuilding Co.	1925	1927	9,000,000	3	..	8 8-*in.* (55 cal.), 12 5-*in.* (25-cal.) A.A. 12 M.G.; 2 6-*pr.* Operates about 80 landplanes. 1 catapult	—	33·9	7100	1927
A.C.	Langley †	11,500	542	65⅓	19	7.200 tur.electric	Mare Island Navy Yard	1912	1922 as aircraft carrier	..	3		4 5-*in.* (51 cal.), operates 7 landplanes	—	15	2000	411

A.C.*	Long Island .	17,600	..	..	..	D.	..	..	1940	..	..	..					
	Independence Belleau Wood And 1 other.	10,000	..	..	..	..	..	1942	Bldg.	..	..	..	..	..	..	..	..
	4 others .	10,000	..	..	..	..	..	Bldg.	..	..	..	..	..	..	..	..	..
E.C.	Card‡ .																
E.C.	Charger‡ .														20		

* Laid down as cruisers. † Formerly Collier Jupiter, converted 1937 into aircraft tender. ‡ Converted from fast merchant ship or tanker hull. ‖ Unconfirmed.

UNITED STATES.—Cruisers.

Class.	NAME.	Standard Displacement.	Length. (Extreme.)	Beam.	Draught	Horse-Power. Type of Machinery and Boilers.	Where Built.	Date of Launch.	Date of Completion.	Cost (exclusive of armament).	Armour.		Armament.		Speed.	Fuel.	Complement.
											Belt. Deck.	Gun Position.	Guns.	Torpedo Tubes.		Oil.	
		tons.	ft.	ft.	ft.					£	in.	in.			knots.	tons.	
	Baltimore							1942									
	Boston							1942	1943								
	Pittsburgh																
	St. Paul																
	Albany																
	Rochester	13,000	..	..	..	tur. (G.)	Bethlehem, Fore River	Bldg.	..	..	..	..	9 *8-in.*, 12 *5-in.*	..	..	..	..
	Columbus																
	Des Moines																
	Canberra							1943									
	Quincy							1943									
	And others																
	Cleveland							1941	1942								
	Columbia							1941	1942								
	Montpelia							Bldg.									
	Denver	10,000	600	..	..	tur. (G.)	New York, S. Co., Camden	Bldg.	..	..	..	..	12 *6-in.*, 12 *5-in.*, 4 aircraft.	.	32½	..	..
	Amsterdam							Bldg.									
	Santa Fé								1942								
	Tallahassee							Bldg.									
	Birmingham							Bldg.									
	Mobile							Bldg.									
	Biloxi	..	..	..	..	..	Newport News S. B. Co.		1943	..	..	..	12 *6-in.*	..	..	..	..
	Vicksburg							Bldg.									
	Flint																
	Pasadena																
	Springfield	..	..	..	..	..	Bethlehem, Fore River	Bldg.	..	..	..	..	12 *6-in.*	..	..	..	..
	Topeka																
	Providence																
	Manchester																

UNITED STATES.—Cruisers.—*Continued.*

Class.	NAME.	Standard displacement.	Length (Extreme).	Beam.	Draught.	Horse-Power. Type of Machinery and Boilers.	Where built.	Date of Launch.	Date of Completion.	Cost (exclusive of armament).	Armour.		Armament.		Speed.	Fuel.	Complement.
											Belt. / Deck.	Gun Position.	Guns.	Torpedo Tubes.		Oil.	
		tons.	ft.	ft.	ft.					£	ins.	ins.			knots.	tons.	
	Cheyenne **Duluth**	..	..	..	..	..	Federal, S. B. Co.		Bldg.	..	..	..	12 *6-in.*	..	..	..	..
	Miami **Wilkes-Barre** **Oklahoma City** **Little Rock** **Galveston** **Youngstown**	..	..	..	..	..	Cramp, S.B. 6	1942 Bldg.	..	..	..	..	12 *6-in.*	..	..	..	..
	Houston **Northampton** **Atlanta**	..	..	..	..	..	..	..	Late* 1943								
	Juneau **Astoria** **Vincennes**	..	..	..	..	..	Philadelphia (Cramp)	6.3.43									
Phœnix Class	**Phœnix**	10,000 esti-mated	600 (on W.L.)	61 6	19 9	100,000 (G.) B.& W.	N.Y.S. Co., Camden	1938	1938	2,395,000	$\frac{5}{3}$	..	15 *6-in.*, 8 *5-in.*, 10 M., 4 seaplanes, 2 catapults	..	32½	2100	630
	Boise						Newport News	1936		2,330,000							
	Honolulu						N.Y. Navy Yard	1937									
	St. Louis						Newport News	1938	1939								
	San Diego	6,000	530 (on W.L.)	53¼	16½	75,000 (G.)	Bethlehem Quincy	1941	1942	..	..	..	12 *5-in.* guns	6 *21-in*	33	Oil	..
	San Juan							1941	1942								
	Oakland						Bethlehem, San Francisco	1942	Bldg.								
	Reno								Bldg.								
	Spokane								Bldg.								
	Tucson								Bldg.								

* Unconfirmed.

Wichita Class	**Wichita**	10,000	600 (on w.l.)	61¾	19¾	100,000 (G.)	Philadelphia Navy Yard	1937	1939	..	..	..	9 *8-in.*, 8 *5-in.* A.A., 2 *3-pr.*, 10 smaller, 2 catapults, 4 aircraft	None	32½	1650	630
Brooklyn Class	**Savannah**	10,000	600 (on w.l.)	61½	19¾	95,000 (G.)	N.Y.S. Co., Camden	1937	1938	2,410,000 estimated	5/3	..	15 *6-in.*, 8 *5-in.*, A.A., 10 M., 4 seaplanes, 2 catapults	None	32½	Oil	630
	Nashville						N.Y.S. Co., Camden	1937	1938								
	Brooklyn						New York Navy Yard	1937	1938								
	Philadelphia						Philadelphia Navy Yard	1937	1938								
Astoria Class	**Tuscaloosa**	9975	588	61¾	19½	107,000 W.G.T. (Tuscaloosa) P.T.(G.)	New York, S. B. Co.	1933	1934		5/3		9 *8-in.* (55 cal.), 8 *5-in.* (25 cal.) A.A., 2 *3-pr.*, and 10 smaller, 2 catapults, 4–6 aircraft, 50 mines	None	32·7	Oil	620
	San Francisco	9950					Mare Island Navy Yard			2,090,000 estimated							
	New Orleans	9950					New York Navy Yard			2,460,000							
	Minneapolis	9950					Philadelphia Navy Yard			2,460,000							
Portland Class	**Portland**	9800	610½	66	17½	107,000 P.T (G.)	Bethlehem S. B. Co. Quincy	1932	1933	2,210,000	4/2	..	9 *8-in.* (55 cal.), 8 *5-in.* (25 cal.) A.A., 2 *3-pr.*, and 10 smaller, 2 catapults, 4–6 aircraft	6 21-in.	32·7	Oil	620
	Indianapolis	9950					New York S. B. Co.	1931	1932	2,250,000							
Chester Class	**Chester**	9200	600½	66	16·8–17·6	107.000 P.T. (G.)	American Brown Boveri Elec Corp.	1929	1930	2,230,000	3/2	..	9 *8-in.* (55 cal.), 4 *5-in.* (25 cal.) A.A., 2 *3-pr.*, 8 M., 2 catapults, 4-6 seaplanes	6 21-in. (T)	32½	1500	611
	Louisville	9050					Puget Sound Navy Yard	1930	1931	2,290,000							

UNITED STATES.—Cruisers.—*Continued.*

Class.	NAME.	Standard Displacement.	Length. (Extreme.)	Beam.	Draught.	Horse-Power. Type of Machinery and Boilers.	Where Built.	Date of Launch.	Date of Completion.	Cost (exclusive of armament).	Armour. Belt. / Deck.	Armour. Gun Position.	Armament. Guns.	Armament. Torpedo Tubes.	Speed.	Fuel. Oil.	Complement.
		tons.	ft.	ft.	ft.					£	in.	in.			knots.	tons.	
Augusta Class	**Augusta**	9050	600¼	66	16·3–17·6	107,000 P.T. (G.)	Newport News S. B. & D. D. Co.	1930	1931	2,170,000	3/2	..	9 *8-in.* (55 cal.), 4 *5-in.* (25 cal.) A.A., 2 *3-pr.*, 8 M., 2 catapults, 4–6 seaplanes.	6 21-in. (T.)	32½	1500	511
Omaha Class	**Cincinnati**	7050	555½	55⅓	13½	90,000 P.T. (G.)	Tacoma, Wash.	1921	1924	1,730,000	3/1½	..	12 *6-in.* (53 cal.) (Cincinnati and Detroit, 10 *6-in.*), 4 *3-in.* (50 cal.) A.A., 2 *3-pr.*, 2 catapults, 2 aircraft, 30 mines	6 21-in. (T)	33·7	1800	450
	Concord	7050	555½	55⅓	13½		Philadelphia (Cramp)	1921	1924	1,742,000							
	Detroit	7050	555½	55⅓	13½	90,000 C.T. (G.)	Bethlehem S. B. Co. Quincy	1922	1923	1,584,000	3/1½	..					
	Trenton	7050	555½	55⅓	13½	90,000 P.T. (G.)	Philadelphia (Cramp)	1923	1924	1,823,000	3/1½	..	10 *6-in.* (53 cal.) (Marblehead, 11 *6-in.*), 7 *3-in.* (50 cal.) A.A.; 2 *3-pr.*, 4 M., 2 catapults, 2 floatplanes, 30 mines	6 21-in. (T.)	33·7	1800	450
	Marblehead						Philadelphia (Cramp)	1923	1924	1,810,000							
	Memphis						Tacoma, Wash.	1924	1925	1,838,000							
	Milwaukee						Philadelphia (Cramp)	1921	1923	1,794,000							
	Omaha	7050	555½	55⅓	13½	90,000 P.T. (G.) (Raleigh) C.T (G.)	Tacoma, Wash.	1920	1923	1,823,000	3/1½	..	10 *6-in.* (53 cal.) (Omaha, 12 *6-in.*), 7 *3-in.* (50 cal.) A.A.; 2 *3-pr.*, 2 catapults, 2 floatplanes, 30 mines	6 21-in. (T.)	33·7	1800	450
	Raleigh						Bethlehem S. B. Co., Quincy	1923	1924	1,616,000							
	Richmond						Philadelphia (Cramp)	1921	1923	1,742,000							
Pensacola Class	**Salt Lake City**	9100	585½	65¼	16	107,000 P.T. (G.)	New York S.B. Co.	1929	1929	3,400,000	3/1½	..	10 *8-in.* (55 cal.), 4 *5-in.* (25 cal.) A.A., 2 *3-pr.*, 8 M., 2 catapults, 4 planes	6 21-in. (T.)	32·7	3000	603
	Pensacola.						Navy Yard, New York	1929	1930								

UNITED STATES.—Miscellaneous Craft.

FRIGATES—Number building unknown.

GUNBOATS.—Tulsa (1923), and Asheville (1920), 1,270 tons, 12 knots, 3 4-in., 2 3-pr., 3 1-pr.; Sacramento (1914); 1,140 tons, 12½ knots, 3 4-in., 2 3-pr., 2 1-pr.; Charleston, and Erie (1936), 2,000 tons, 20 knots, 4 6-in., 4 M.G., 1 seaplane; Dubuque and Paducah (1905), 1,000 tons, 13 knots, 4 4-in., 1 3-in.; Niagara, Vixen, St. Augustine, Jamestown, ex-Yachts. A number similar to British "Flower" Class Corvettes.

RIVER GUNBOATS.—Wake (ex-Guam) (1927), ; Tutuila (1928), 370 tons, 14 knots, 2 3-in., 10 M.; Monocacy (1914), 180 tons, 13½ knots, 2 3-in., 7 M.

MINELAYERS.—Aroostook (1918), 4,200 tons, 20 knots, 1 5-in., 2 3-in. A.A., 350 mines; 8 light mine-layers, ex-T.B.D. s., 1,160–1,190 tons, 35 knots, 4 4-in., 1 3 -in. A.A., 80 mines. Terror, 6,000 tons (building), 5-in. guns.; Catskill and Ozark (building). A number of Converted Merchant Ships.

MINESWEEPERS.—26 in number, "Bird" class (1918, 1919), 840 tons, 1,400 H.P., 14 knots, 2 3-in. A.A. guns authorised but not carried. Raven, Osprey, Auk, and 8 others, 600 tons (1941–42); 200 building; 100 converted trawlers.

SEAPLANE TENDERS.—Albemarle, Curtiss (1940); Currituck, Norton Sound, Pine Island, Puget Sound (Building), 8,300 tons, 18 knots, 2 5-in., 2 3-in., 24 seaplanes; Barnegat, Biscayne (1941), Casco, Mackinac, Humboldt, Matagorda, Absecon, Chincoteague, Coos Bay, Half Moon, Mobsack, Oyster Bay, Rockaway, San Pablo, Unimak, Yakutat (building), 1,650 tons, 20 knots, 2 5-in.; Wright (1921), 8,675 tons, 15 knots, 2 5-in., 2 3-in.; a number of converted Merchant ships, 8,000 tons gross; 14 converted Destroyers: Sandpiper, Gannet, Thrush, Swan, Heron, Pelican, Avocet, Teal, Lapwing (1918–1919), 840 tons, 14 knots, 2 3-in.

COAST GUARD CRUISING CUTTERS.—7 in number, 2,000 tons, 20 knots, 2 5-in., 2 6-pr., 1 seaplane; 6 in number, 1,000 tons, 13½ knots, 2 3-in.; 10 in number, 1,500 tons, 16½ knots, 1 5-in., 1 3-in.; 4 in number, 1,800 tons, 15 knots, 2 5-in., 1 3-in.; 9 others, 800–1,200 tons, 12 knots, 2 3-in.

COAST GUARD PATROL BOATS.—19 in number, 311 tons, 16 knots, 1 3-in., 2 6-pr.; 36 in number, 200 tons, 10 knots, 1 3-in.; 15 in number, 45 tons, 22 knots; 58 in number, 37 tons, 13½ knots, 1 1-pr.; 20 motor boats, 20 tons.

RADIO-CONTROLLED TARGET SHIPS.—Boggs, Lamberton (ex-Destroyers).

MOTOR TORPEDO BOATS.—P1–4, 59 feet long, 40 knots, 2,400 H.P.; P5–8, 81 feet long, 40 knots, 3,600 H.P.; P9 and 22 others, 70 feet long, 43 knots, 3,600 H.P., 4 T.T., 4 ·5 M.G.; P.T. 20 and others, 77 feet, 4 ·5 M.G., 4 T.T.; P.T. 103 and others, 80 feet, 1 ·75-in. M.G., 4 ·5-in. M.G., 2 T.T.

SUBMARINE CHASERS.—P.C. 449, 450, 110 feet long, 22 knots, 1 3-in.; P.C. 451, 170 feet long, 22 knots, 1 3-in.; 13 in number (1918–21), 75 tons, 17 knots, 1 3-in.; P.T.C. 1–12 (1941) and P.T.C. 13–36 (building), have wood hulls. A number of converted Yachts.

OILERS.—Cimarron, Platte (1939), 16,000 tons, 16½ knots, 4 5-in.; Brazos (1920), 5,400 tons, 14 knots, 4 5-in., 2 3-in.; Patoka, Ramapo, Sapelo, Trinity, Sepulga, Salinas, Tippecanoe, Rapidan (1920), 5,375 tons, 10½ knots; Maumee, Guyama, Kanawha (1915), 4,990 tons, 14 knots, 4 5-in., 4 4-in.; Laramie, Kaweah, Mattole (1920), 4,410 tons, 11 knots, 2 5-in., 2 3-in.; Robert L. Barnes (1917), 1,630 tons, 8½ knots; Sabine, Salamonie, Kaskaskia, Sangamon, Chemung, Chenango, Guadalupe, Santee, Suwannee, and others. COLLIERS.—Nereus, Proteus (1913), 6,275 tons, 14 knots. AMMUNITION SHIPS.—Pyro, Nitro, 7,025, 13 knots, 4 5-in., 2 3-in. 4 others.

DESTROYER TENDERS.—Dobbin (8,325 tons); Whitney (8,325 tons), and Melville (5,250 tons), 16 knots, 8 5-in., 4 3-in.; Altair, Denebola and Rigel, 6,250 tons, 10½ knots, 8 5-in., 4 3-in. A.A.; Black Hawk, 5,600 tons, 13 knots, 4 5-in.; Bridgeport, 7,125 tons, 12½ knots, 8 5-in.; Dixie, Prairie, 9,000 tons, 16½ knots; Piedmont, Sierra, Yosemite and Cascade.

SUBMARINE TENDERS.—Holland (1926), 8,100 tons, 16 knots, 8 5-in., 4 3-in. A.A., 2 6-pr.; Camden (1900), 6,075 tons, 12 knots, 4 4-in., 2 3-pr.; Beaver (1910), 4,670 tons, 16½ knots, 4 5-in., 2 1-pr.; Argonne (1921), 8,400 tons, 15½ knots, 2 6-pr.; Fulton, Sperry (building), 9,000 tons, 16 knots; Griffin, 16½ knots; Seagull (1919), 840 tons, 14 knots, 2 3-in.; Otus, Pelias, Antaeus, ex-Merchant Vessels; Howard W. Gilmore (building).

REPAIR SHIPS.—Medusa (1924), 8,125 tons, 16 knots, 4 5-in., 2 3-in. A.A., 2 6-pr.; Vestal, Prometheus (1909), 6,625 tons, 16 knots, 4 5-in., 1 3-in.; Vulcan, 9,500 tons (1941).

TRAINING SHIP.—Wyoming (1912), 26,000 tons, 18 knots, 6 12-in., 16 5-in., 8 3-in.; Wheeling, 870 tons, 13 knots, 1 4-in.; Wilmington, 1,280 tons, 15 knots, 8 4-in.

5 Store ships, 50 Cargo ships, 9 Patrol vessels (Eagle class, 430 tons, 18 knots, 2 4-in., 1 3-in. A.A.), 35 tugs, 10 cable ships, 7 Auxiliaries, 20 Yachts, 48 Net Tenders.

HOSPITAL SHIPS.—Solace (ex-Iroquois), 1927, 6,200 tons gross, 19 knots, 400 beds; Relef (1920), 7,275 tons, 15 knots, 535 Beds.

SURVEY VESSELS.—Sumner (1915), 2,900 tons, 14 knots, 4 5-in., 2 3-pr.; Bowditch (1929), Hannibal, Andradite.

SUBMARINE RESCUE VESSELS.—Ortolan, Falcon, Mallard, Pigeon, Widgeon, Chewink (1918–19), 1,060 tons, 14 knots.

TRANSPORTS.—Wakefield (ex-Manhattan), 24,000 tons. A number of other converted liners.

For Destroyers and Submarines, see Flotilla Tables.

SHIPS OF THE LESSER NAVIES.

BELGIUM.

CORVETTE.—2 in number (ex-British).

BULGARIA.

MOTOR TORPEDO BOATS.—2 in number (Lurssen, 1939), 60 tons, 30 knots, 1 M.A.A., 2 21-in. torpedo tubes.
PATROL VESSELS.—**Derzki, Khrabri, Letoutschy, Shumni,** and **Strogi** (ex-French, 1907–08), 97 tons, 17 knots, 2 1·85-in., 1 M., 2 18-in. torpedo tubes.
MINESWEEPERS.—2 in number (ex-French, 1918), 350 tons, 17 knots.
TRAINING SHIPS.—**Tsar Assen** (ex-Dutch, 1912), 240 tons, 9 knots, 2 2·6-in., 1 M.; **Kamcia** (1898), 10 knots; **Simeon,** 600 tons, 2 3-in., 4 1·5-in.
MOTOR BOATS.—**Vzrif** and **Capitan Minkoff** (ex-French, 1918), 40 tons, 14 knots, 2 M.; **Belmoretz** and **Chernomoretz** (ex-French, 1918), 77 tons, 17 knots, 1 1·85-in., 2 M.

CHINA.

GUNBOATS.—**Chang Ning, Cheng Ning, Wu Ning, Sui Ning, Wei Ning,** and **Su Ning** (Shanghai, 1933–34), 300 tons, 11 knots, 2 2·25-in., 3 M.; **Min Chuan** (Shanghai, 1931), 460 tons, 16 knots, 1 4·7-in., 1 4-in., 1 3-in., 2 2·24-in.; **Chu Chien** (Kobe, 1906); **Chu Kuan** and **Chu Tung** (Kobe, 1907), 11 knots, 1 3-in.; **Yung Sui** (Shanghai, 1929), 600 tons, 18 knots, 1 6-in., 1 4·7-in., 3 3-in., 2 2·24-in., 2 1·5-in. A.A., 4 M.; **Tutuila** (Shanghai, 1928), 370 tons, 14½ knots, 2 3-in., 10 M.
RIVER GUNBOATS.—**Sandpiper** (ex-British, 1933), 185 tons, 11¼ knots, 1 3·7-in. howitzer, 1 6-pdr.; **Falcon** (ex-British, 1928), 372 tons, 15 knots, 1 3·7-in. howitzer, 2 6-pdr.; **Gannet** (ex-British, 1925), 310 tons, 16 knots, 2 3-in. H.A.; **Kiang Hsi** and **Kiang Kan** (Germany, 1912), 140 tons, 9 knots.
TORPEDO BOAT.—**Hu Chun** (Kobe, 1908), 96 tons, 20 knots, 1 1·85-in., 1 1·5-in., 3 14-in. torpedo tubes.
ARMED LAUNCHES.—15 in number.
ARMED TRANSPORTS.—25 in number
PATROL VESSELS.—4 in number.

COLOMBIA.

DESTROYERS.—**Caldas** and **Antioquia** (Yarrow, 1934), 1,282 tons, 319 ft. B.P., 31 ft. beam, 36 knots, 4 4·7-in., 3 1·5-in. A.A., 2 depth charge throwers, 8 21-in. torpedo tubes, 236 tons of oil fuel, 140 complement.

GUNBOATS.—**Mariscal Sucre** (Yarrow, 1909), 500 tons, 23 knots, 2 3-in., 3 M.; **Cordoba** (ex-French, 1919), 450 tons, 16 knots, 4 3-in.; **Pichincha, Carabobo,** and **Junin** (ex-French, 1925), 200 tons, 13 knots, 1 3-in., 2 M.; **Barranquilla** and **Cartagena** (Yarrow, 1930), 140 tons, 13·5 knots, 2 3-in., 8 M.; **A, B, C, D** (ex-German L.M. 15, 17, 19, 20, 1918), 12 tons, 28 knots, 2 M.; **Nos. 1, 2, 3, 4** (Yarrow, 1913), 20 tons, 12 knots, 1 1-pdr.

RIVER GUNBOAT.—**Presidente Mosquera,** 200 tons.

TRANSPORTS.—**General Mosquera** (Caledon Shipbuilding Co., 1910), 3,500 tons, 2 3·5-in.; **Bogota** (ex-German, 1919), 500 tons, 16 knots, 1 3·5-in., 2 3-in., 2 M.; **Boyaca** (ex-U.S.A., 1920), 3,000 tons.

TRAINING SHIP.—**Cucuta** (ex-U.S.A., 1913), 12,000 tons, 10 knots.

CUBA.

LIGHT CRUISER.—**Cuba** (Cramp, Philadelphia, 1911), 2,055 tons, 18 knots, 6,000 H.P., 2 4-in., 6 3-in. H.A., 4 6-pdr., 4 3-pdr., 2 M., 250 tons of coal.

GUNBOATS.—**General Zagas,** 500 tons, 2 1-pdr.; **Capitan Fernandez Quevedo** (Havana, 1932), 115 tons, 12 knots, 1 3-in. H.A., 2 1-pdr.; **Habana, Pinar del Rio, Villas,** and **Matanzas** (Havana, 1912), 80 tons, 12 knots, 1 1-pdr.; **24 de Febrero** and **10 de Octubre** (J. S. White, 1911), 218 tons, 12 knots, 3 3-pdr.; **Baire** (Danzig, 1906), 500 tons, 14 knots, 4 3-in., 2 3-pdr., 1 M.; **Yara** (Middlesbrough, 1905), 450 tons, 12 knots, 1 3-in. H.A., 2 6-pdr.; **20 de Mayo** (Glasgow, 1895), 200 tons, 12 knots, 2 3-pdr., 1 1-pdr.; **Enrique Villuendus** (ex-U.S.A., 1899), 178 tons, 16 knots, 2 3-pdr.

TRAINING SHIP.—**Patria** (Cramp, Philadelphia, 1911), 1,200 tons, 16 knots, 2 3-in., 4 6-pdr., 4 3-pdr.

DOMINICAN REPUBLIC.

COAST GUARD CUTTERS.—3 in number (ex-U.S.A. C.G. 110, 144, 302) (1924), 37 tons, 13·5 knots, 1 1-in.

ECUADOR.

PATROL VESSEL.—**Tarqui,** 50 tons, 1 torpedo tube.

TRAINING SHIP.—**Presidente Alfaro** (Southampton, 1917), 1,030 tons, 16 knots, 2 3-in.

GUNBOAT.—**Abdon Calderon** (ex-Cotopaxi) (1884), 700 tons, 10·5 knots.

TRANSPORT.—**Patria.**

DESPATCH BOAT.—**Atahualpa.**

EGYPT.

PATROL VESSELS.—**Raqib** (Alexandria, 1938), 15 knots, 1 1·46-in.; **Al Sarea** (J. S. White, 1937), 13 tons, 36 knots, 1 1·46-in.; **El Amira Fawzia** (Swan Hunter, 1929), 2,640 tons, 14 knots. 2 3-pdr.; **El Amir Farouq** (Hawthorn Leslie, 1926), 1,441 tons, 17 knots, 1 6-pdr., 2 M.; **Mabahiss** (Swan Hunter, 1930), 618 tons, 11 knots, 1 3-pdr.

TRAINING SHIP.—**Abdel Monaym** (Clydebank, 1902), 610 tons, 13·5 knots.

INSPECTION VESSEL AND STORE CARRIER.—**Naphtys** (Kiel, 1905), 650 tons, 7·5 knots.

TRANSPORT.—**Sollum** (ex-Syringa, Workman Clark, 1917), tons 1,290, 16 knots, 1 3-pdr.

ROYAL YACHT.—**Mahroussa** (Poplar, 1865), 4,561 tons, 16 knots.

COASTAL MOTOR BOATS.—**Darfeel** and **Noor El Bahr** (Thornycroft, 1926), 20 tons, 17 knots, 1 1·46-in.; **Qamar**, 23 tons, 11 knots; **El Hoot**, 24 tons, 7 knots.

ESTONIA.

TORPEDO BOAT.—**Sulev** (ex-German, 1917), 200 tons, 26 knots, 2 3-in., 2 18-in torpedo tubes, 10 mines.

SUBMARINES.—**Lembit** and **Kalev** (Vickers, 1937), 620/820 tons, 13½/8½ knots, 1 1·57-in., 4 21-in. torpedo tubes, 20 mines.

MINELAYERS.—**Suurop** and **Ristna** (1906), 500 tons, 12 knots, 1 3-in., 1 1-pdr.

ICEBREAKERS.—**Suur Toll** (Stettin, 1914), 4,000 tons, 15 knots; **Tasuia** (1914), 1,100 tons; **Jaan Poska** (1929), 250 tons, 11 knots.

PEIPUS LAKE GUNBOATS.—**Ahti** (1908), 144 tons, 10 knots, 2 1·5-in., 2 1-pdr.; **Tartu**, 108 tons, 12 knots, 2 1·5-in., 2 M.

GUNBOAT.—**Laine** (1915), 450 tons, 12 knots, 2 3-in.

RIVER GUNBOAT.—**Mardus** (1911), 100 tons, 10 knots, 2 3-in., 2 M.

MINESWEEPERS.—**Keri** (ex-Kalev) and **Vaindlo** (ex-Olev) (1914), 50 tons, 9 knots, 1 3-pdr.; **Tahkona** (1919), 45 tons, 12 knots.

TUG.—**Tallin** (1900), 100 tons, 10 knots.

TENDERS.—**Kompass** (1919), 300 tons, 9 knots; **Sakala** (1906), 30 tons, 8 knots.

FINLAND.

ARMOURED VESSELS.—**Väinämöinen** (Crichton-Vulcan, 1932), 300 ft. length, 54 ft. beam, 3,900 tons, 15 knots, 4 10-in., 8 4·1-in. A.A. 4 M., 2-in. armour belt.

MOTOR TORPEDO BOATS.—**Sisu** and **Hurja** (ex-Italian, 1920), 13 tons, 25 knots, 2 M., 2 18-in. torpedo tubes; **Isku** (1925), 54 ft. length, 11 tons, 25 knots; **Syöksy, Nuoli, Vinha,** and **Raju** (1929), 13 tons, 35 knots, 2 M., 2 18-in. torpedo tubes. 5 ordered in U.S.A., March, 1940.

SUBMARINES.—**Iku-Turso, Vetehinen** and **Vesihiisi** (Abo, 1930), 490/710 tons, 14·5/8·5 knots, 1 3-in., 4 21-in. torpedo tubes, 20 mines; **Vesikko** (Crichton Vulkan, Abo, 1933), 250/300 tons, 12/7 knots, 1 M., 3 21-in. torpedo tubes; **Saukko** (Helsingfors, 1930), 100/136 tons, 8/5·5 knots, 1 M., 2 18-in. torpedo tubes, 6 mines.

GUNBOATS.—**Turunmaa** (ex-Russian Orlan, 1918), 342 tons, 14 knots, 2 3-in., 5 6-pdr.; **Uusimaa** (ex-German Beo) and **Hämeenmaa** (ex-German Wulf, 1918), 400 tons, 15 knots, 2 4-in., 1 1·5-in. A.A.; **Vakava** and **Aallokas** (1935).

MINELAYERS.—**Pommi, Paukku, Lieska, Miina, Loimu** (1916), 80 tons, 8 knots, 2 M., 24 mines; **Vakava** and **Klercker**, 300 tons.

Minesweepers.—**Rautu** (ex-Russian Murman, 1917) and **Vilppula** (1916), 165 tons, 12 knots, 2 3-in., 1 1·5-in. a.a.; **Ahven, Kiiski, Muikku,** and **Sarki** (1937), 17 tons. 10 knots.

Salvage Vessel.—**Mursu** (ex-Stannum) (1902), 615 tons gross, 8 knots.

Submarine Depot Ship.—**Louhi** (ex-Russian Voin, 1917), 640 tons, 11 knots, 2 1·85-in., 150 mines.

Motor Launches.—**Haukka, A.37, A.38, A.40, A.42, A.43, A.45, A.F.2, B.3, B.V.A.** and **B.V.D.** (1934), 9–25 tons, 8–10 knots, 1 m.

Patrol Boats.—**V.M.V. 1, 2, 5, 6** (1931), **V.M.V.** 8–17 (Germany, 1935), 30 tons, 25 knots, 1 ·75-in.

Training Ship.—**Suomen Joutsen** (St. Nazaire, 1902), 3,000 tons, 6 knots.

Icebreakers.—**Sisu** (Helsingfors, 1939), 2,000 tons, 15 knots, 2 4-in.; **Otso** (1936), 800 tons, 13 knots; **Jääkarhu** (1926), 4,825 tons, 15 knots; **Sampo** (Armstrong, 1899), 1,850 tons, 15 knots, 3 4·7-in.; **Tarmo** (ex-Sampo II) (Armstrong, 1907), 2,400 tons, 14 knots; 3 4·7-in.; **Murtaja** (Stockholm, 1890), 820 tons, 11 knots, 1 4·7-in.; **Apu** (Kiel, 1899), 600 tons, 13 knots, 2 4·7-in.; **Voima** (Sandvikens, 1924), 2,000 tons, 14 knots, 1 4·7-in.

HAYTI.

Special Service Vessels.—**Nord Alexis** (1891), 1,230 tons, 14 knots, 2 4·7-in.; **Veretieres** (1889), 270 tons, 9 knots, 2 m.; **17 Décembre** 851 tons; **Pacifique**, 488 tons, 14 knots.

HUNGARY.

Patrol Vessels.—**Debreczen, Gyor, Baja,** and **Sopron** (Budapest, 1918), 140 tons, 15 knots, 2 2·75-in., 2 m.; **Kecskemet and Szeged** (Budapest, 1915), 133 tons, 15 knots, 4 2·75-in., 2 m.

Auxiliary Vessels.—**Csobánc** (1926), 300 tons, 8 knots; **Körös** (1916), 170 tons; **Maros** (1927), 40 tons; **Mecsek, 35 tons.**

Motor Boats.—**Honved, Huszar,** and **Tuzer** (1916), 17 tons, 7 knots, 2 m.; 2 in number, 30 tons; 10 in number, 10 tons.

Training Ship.—**Badacsony** (1909), 230 tons, 10·5 knots.

ICELAND.

Fishery Protection Vessels.—**Aegir** (1925), 500 tons, 14 knots, 1 2·24-in.; **Thor** (ex-German, 1922), 300 tons, 10 knots, 1 2·24-in.; **Odinn** (1938), 72 tons, 11 knots, 1 1·85-in.

IRAQ.

Patrol Vessels.—**Nos. 1, 2, 3, 4** (Thornycroft, 1937), **100 ft.** length, 64 tons, 12 knots, 1 3·7-in. howitzer, 4 m.

Yacht.—**Panfield X** (ex-Sans Peur, J. Brown, 1923), 1,200 tons, 13 knots.

LATVIA.

SUBMARINE DEPOT SHIP.—**Varonis** (1908), 250 tons, 10 knots.

GUNBOAT.—**Virsaitis** (ex-German, 1917), 380 tons, 16 knots, 2 3-in. 2 6-pdr., 1 3-in. H.A., 1 torpedo tube.

MINESWEEPERS.—**Imanta, Viesturs** (1926), 215 tons, 14 knots, 1 3-in. 4 M.

ICEBREAKER.—**Krisjanis Valdemars** (Beardmore, 1925), 2,800 tons, 14 knots.

SURVEYING VESSEL.—**Hidrografs** (Danzig, 1918), 450 tons, 10 knots.

LITHUANIA.

PATROL VESSEL.—**Prezidentas Smetone** (ex-German, 1917), 500 tons, 17 knots, 2 3-in., 3 M.

MANCHUKUO.

DESTROYER.—**Hai Wei** (ex-Japanese Kashi, Maizura, 1917), 755 tons, 31·5 knots, 3 4·7-in, 3 M., 6 18-in. torpedo tubes.

GUNBOATS.—**Chingjen** and **Tingpien** (Harima, 1935), 290 tons, 13 knots, 2 4·7-in., 3 M.; **Shun T'ien** and **Yang Min** (Harima, 1934), 270 tons, 12 knots, 2 4·7-in. A.A., 3 M.; **Li Sui** (ex-German, 1910), 270 tons, 13 knots, 2 2·24-in., 2 M.; **Li Chi** (ex-German, 1904), 270 tons, 13 knots, 1 3-in., 4 M.; **Kuang Ning, Kuang Ch'ing,** and **Chiang T'ung** (1900), 200 tons, 9 knots, 1 3-in., 4 M.; **Ta T'ung** and **Li Min** (Kobe, 1933), 65 tons, 10·5 knots, 3 M.

ARMED LAUNCHES.—**Chi Min** (Kawasaki, 1934), 20 tons, 10 knots, 2 M.; **En Min, Hui Min, P'u Min** (Kawasaki, 1933), 15 tons, 10 knots, 2 M.

PATROL BOATS.—**Hailung** and **Haifeng** (Kawasaki, 1933), 184 tons, 14 knots, 2 3·1-in., 2 M.; **Hai Kuang, Hai Jui, Hai Jung, Hai Hua** (Kawasaki, 1933), 42 tons, 12 knots, 1 2·24-in., 2 M.; **Daichi Kaihen** and **Daini Kaihen** (Yokohama, 1933), 42 tons, 15 knots, 2 M.

MEXICO.

SLOOPS.—**Durango** (Valencia, 1936), 1,600 tons, 20 knots, 4 4-in., 2 twin 1-in. pom poms, 2 quadruple ·5-in. M., can carry 500 men and 80 horses; **Potosi** (Cadiz, 1935), **Queretaro** and **Guanajuato** (Ferrol, 1935), 1,200 tons, 20 knots, 3 4-in.,2 twin 1-in. pom poms, 2 quadruple ·5-in M. A.A., can carry 250 men and 20 horses.

GUNBOATS.—**Nicolas Bravo** (Odero, 1904), 1,227 tons, 12·3 knots, 2 4-in., 4 6-pdr., 2 M.; **G. Nos. 20–29** (Bilbao, 1935), 130 tons, 26 knots, 1 twin ·5 pom pom, 1 quadruple 1-in. pom. pom.

TRANSPORTS.—**Progreso** (Genoa, 1907), 1,590 tons, 13 knots, 4 6-pdr., 2 M.; **Bolivar** (1920), **Washington** (1920), **Moctezuma** (1919), **Coahuila** and **Jalisco** (Philadelphia, 1916), 5,794 tons, 10·5 knots.

OIL TANKER.—**Mexico** (1913), 2,559 tons (gross).

PATROL BOATS.—**Mazatlan, Acapulco,** and **Vera Cruz** (Canada, 1918), 486 tons, 8 knots, 1 2·2-in., 2 1·5-in., 2 M.

NICARAGUA.

GUNBOAT.—**Momotombo,** 400 tons, 2 3-in., 1 6-pdr.
PATROL BOAT.—1 in number (ex-U.S.A., CG274) (1924), 37 tons, 75 ft., 13·5 knots, 1 1-pdr.

PARAGUAY.

GUNBOATS.—**Paraguay** and **Humaita** (Genoa, 1931), 636 tons, 17 knots, 4 4·7-in., 4 3-in. H.A., 2 M.; **Capitan Cabral** (Haarlem, 1907), 120 tons, 10 knots, 1 3-in., 2 6-pdr., 2 M.; **Taguari** (Hosking, 1910), 150 tons, 10 knots, 4 3-in., 2 1·46-in.
DESPATCH VESSEL.—**Teniente Herreros** (Conrad, 1908), 100 tons, 12 knots, 1 3-in., 2 1-pdr., 2 M.

PERSIA (IRAN).

PATROL VESSELS.—**Moti** (ex-Karkas), **Lal** (ex-Simorgh), **Hira** (ex-Chahbaaz), and **Nilam** (ex-Chahrokh) (Naples, 1932), 325 tons, 15 knots, 900 B.H.P., 2 3-in., 2 M.
MOTOR BOATS.—**Azerbaijan, Gehlani,** and **Mazenderan** (Palermo, 1935), 68½ ft., 28 tons, 14 knots, 1 1·5-in.
TUG.—**Niru** (1935), 14 knots.

PERU.

LIGHT CRUISERS.—**Almirante Grau** and **Coronel Bolognesi** (Vickers, 1907), 3,200 tons, 24 knots, 2 6-in., 8 3-in., 8 M., 2 18-in. torpedo tubes.
DESTROYERS.—**Almirante Guise** (ex-Russian, 1917), 1,400 tons, 35 knots, 5 4-in., 1 2-pdr. A.A., 1 M., 3 18-in. torpedo tubes; 80 mines; **Almirante Villar** (ex-Russian, 1918), 1,185 tons, 35 knots, 4 4-in., 1 2-pdr., 2 M., 3 18-in. torpedo tubes, 80 mines.
SUBMARINES.—**R.1–4** (U.S.A., 1926–28), 576/682 tons, 14·5/10 knots, 1 3-in. 4 21-in. torpedo tubes.
GUNBOATS.—**Amazonas** and **Loreto** (Electric S.B. Co., 1934), 250 tons, 15 knots, 4 3-in. H.A., 2 ·8-in., 2 M.; **America** (1904), 350 tons, 14 knots, 2 3-pdr.; **Coronel Portillo** (ex-San Pablo, 1902), 49 tons, 7 knots, 2 3-pdr.; **Iquitos** (1875), rebuilt, 1896, 50 tons, 7·5 knots, 4 1·46-in., 2 ·8-in., 2 M.; **Napo** (Yarrow, 1921), 98 tons, 12 knots, 3 1·8-in.
TRANSPORT.—**Rimac** (ex-Eten, 1907), 6,848 tons gross, 12 knots, cargo capacity, 7,000 tons.
OILER.—**Parinas** (Thornycroft, 1921), 2,820 tons, 10 knots, carries 4,300 tons of oil.

PHILIPPINES.

MOTOR TORPEDO BOATS.—4 in number (Thornycroft, 1939), 40 knots, 4 Lewis guns, 2 torpedo troughs.

POLAND.

DESTROYERS.—**Blyskawica** (J. S. White, 1937), 2,144 tons, 39 knots, 7 4·7-in., 4 1·57-in., 2 triple 21-in. torpedo tubes; **Burza** (Chantiers Navals, 1932), 1,540 tons, 35 knots, 4 5·1-in.. 1 2·9-in. H.A., 6 21·7-in. torpedo tubes; **Piorun** (1940), **Krakowiak,** British built; **Garland,** ex-British, Greyhound class; **Slazak,** ex-British, Hunt class.

SUBMARINES.—**Sep** (Rotterdam, 1939), 1,090/1,450 tons, 14·5/11 knots 1 4·1-in., 2 1·57-in. A.A., 12 21·7-in. torpedo tubes; **Zbik, Rys,** and **Wilk** (built in France, 1931–32), 965/1,230 tons, 14/9 knots, 1 3·9-in., 1 2-pdr. A.A., 6 21·7-in. torpedo tubes, 40 mines; **Sokol** (1941), British Ursula Class.

MINELAYER.—**Gryf** (Havre, 1938), 2,100 tons, 20 knots, 6 4·7-in., 4 1·57-in. A.A., 300 mines.

MINESWEEPERS.—**Oxhoft** (ex-Zuraw) (Gdynia, 1939), 200 tons, 17 knots; **Westerplatte** (ex-Czajka) (Modlin, 1936), 140 tons, 15 knots, 1 3-in., 4 M.

TRAINING SHIP.—**Iskra** (ex-British, 1917), Three Masted Schooner, 500 tons.

MOTOR GUNBOATS.—ex-British, number unknown.

NOTE.—**Sep, Zbik,** and **Rys** are interned in Sweden.

PORTUGAL.

DESTROYERS.—**Douro, Tejo, Dao** (Yarrow, Lisbon, 1935–36), **Lima** and **Vouga** (Yarrow, Glasgow, 1933), 1,220 tons, 33,000 S.H.P., 36 knots, 4 4·7-in., 3 1·5-in. A.A. pom poms, 2 quadruple 21-in. torpedo tubes, 20 mines, complement 164. Three Destroyers building.

MOTOR TORPEDO BOATS.—6 in number.

SUBMARINES.—**Golfinho, Espadarte, Delfim** (Vickers, 1934–35), 900/1,100 tons, 2,300/1,000 B.H.P., 16·5/9·2 knots, 1 4-in., 2 M., 6 21-in. torpedo tubes. Three submarines building.

GUNBOATS.—**Faro** and **Lagos** (Lisbon, 1928, 1932), 300 tons, 13 knots, 2 1·85-in.; **Ibo** (1912), **Mandovi** (1918), **Zaire** (1297), **Diu** (1932), built at Naval Arsenal, Lisbon, 400 tons, 13 knots, 2 3-in., 2 3-pdr., 2 M. 6 in number building.

RIVER GUNBOATS.—**Macau** (Yarrow, 1909), 95 tons, 12 knots, 2 6-pdr., 3 M.; **Rio Minho** (Lisbon, 1904), 37 tons, 7·5 knots, 1 1-pdr., 2 M.; **Tete** (Yarrow, 1904), 70 tons, 7·5 knots, 2 3-pdr., 3 1-pdr.

SLOOPS.—**Bartolomeu Dias** and **Afonso de Albuquerque** (Hawthorn Leslie, 1935), 1,780 tons, 21 knots, 4 4·7-in., 2 3-in. H.A., 4 pom poms, 2 depth charge throwers, 40 mines; **Joao de Lisboa** (ex-Infante don Henrique, 1937) and **Pedro Nunes** (1935), built at Lisbon, 1,080 tons, 17 knots, 2 1·85-in., 4 1·57-in. A.A., 2 depth charge throwers; **Goncalves Zarco** and **Goncalo Velho** (Hawthorn Leslie, 1933), 950 tons, 16·5 knots, 3 4·7-in., 2 1·85-in., 2 2-pdr. pom poms.

TRAINING SHIPS.—**Vulcano** (Thornycroft, 1910), 500 tons, 12 knots; **Lince** (Leghorn, 1911), 77 tons, 12 knots; **Sagres** (Bremerhaven, 1896), 3,100 tons, 7 knots.

FISHERY PROTECTION VESSELS.—**Lidador** (Birkenhead, 1884), 200 tons, 9 knots, 2 3-pdr.; 2 in number, building, 250 tons, 18 knots, 4 1-in. A.A. 6 in number building.

SURVEYING SHIPS.—**D. Joad de Castro** (Alfeite, 1941), 960 tons, 14 knots, 1 3-in., 1 aircraft; **Berrio** (La Loire, 1898), 350 tons, 10 knots; **Carvalho Araujo** (ex-H.M.S. Jonquil, 1915), 900 tons, 17 knots.

LIGHTHOUSE TENDER.—**Almirante Schultz** (Penhoey, 1929), 520 tons, 11·5 knots.

TANKER.—**Sambraz** (building), 7,000 tons (capacity 3,500 tons), 12 knots, 1 3·9-in. A.A.

ROUMANIA.*

DESTROYERS.—**Regele Ferdinand** and **Regina Maria** (Naples, 1930), 1,785 tons, length 348¾ ft., 42,000 S.H.P., 38 knots, 5 4·7-in., 1 3-in. H.A., 2 triple 21-in. torpedo tubes, 50 mines; **Marasti** (ex-Italian Sparviero, 1917), 1,460 tons, 40,000 S.H.P., 35 knots, 5 4·7-in. 4 3-in. H.A., 2 M., 2 double 18-in. torpedo tubes, 50 mines.

MOTOR TORPEDO BOATS.—**Viforul**, **Viscolul**, and **Vijelia** (ex-British, 1939), 70 ft. length, 30 tons, 41 knots, 8 M., 2 21-in. torpedo tubes.

TORPEDO BOATS.—**Naluca**, **Sborul**, and **Zmeul** (ex-Austrian, 1913–14), 260 tons, 28 knots, 2 2·6-in., 2 torpedo tubes in **Naluca** and **Sborul**.

SUBMARINES.—**Delfinul** (Fiume, 1936), 700/950 tons, 1,600/1,300 S.H.P., 14/9·5 knots, 1 4·2-in., 6 21-in. torpedo tubes; **S.1**, **S.2** (Galatz, 1941).

SUBMARINE DEPOT SHIP.—**Constanta** (Fiume, 1930), 1,821 tons, 13 knots, 2 4-in.

RIVER MONITORS.—**Lascar Catargiu**, **Ioan Bratianu**, **Mihail Kogalniceaunu**, **Alexandru Lahovari** (Trieste, 1907–08), 680 tons, 13 knots, 3 4·7-in., 1 3-in. A.A., 2 1·85-in., 4 M.; **Bucovina** (ex-Austrian Sava, Budapest, 1916), 550 tons, 12 knots, 2 4·7-in., 2 4·7-in. howitzers, 2 2·6-in. A.A., 2 1·85-in. 6 M.; **Basarabia** (ex-Austrian Inn, Budapest, 1915), 590 tons, 12 knots, 2 4·7-in., 2 4·7-in. howitzers, 2 1·85-in., 9 M.; **Ardeal** (ex-Austrian Temes, Budapest, 1904), 450 tons, 10 knots, 2 4·7-in., 1 3·5-in. A.A., 2 1·85-in., 2 M.

GUNBOATS.—**Stihi** (ex-French Friponne, Lorient, 1917), **Dumitrescu** (ex-French Mignonne, Brest, 1917), **Ghiculescu** (ex-French Impatiente, Brest, 1916), 350 tons, 15 knots, 2 3·9-in., 2 M.

PATROL BOATS.—**Nos. 1–7** (Thornycroft, 1908), 100 ft., 50 tons, 18 knots, 1 3-pdr., 1 M.

RIVER GUNBOATS.—**Bistritsa**, **Oltul**, and **Siretul** (Blackwall, 1888), 100 tons, 12 knots, 1 6-pdr., 1 1-pdr.

MINELAYERS.—**Admiral Murgescu** (Galatz, 1940), and **Cetetea Alba** (Hamburg, 1940), 812 tons, 16 knots, 2 4-in., 2 1·46-in., 135 mines.

YACHTS.—**Luceafarul** (Glasgow, 1931), 1,580 tons, 17 knots; **Taifun** (J. S. White, 1938), 34 tons; **Macin**, **Stefan Cel Mare**.

TRAINING SHIP.—**Mircea** (Hamburg, 1939), 1,750 tons, 10 knots.

MOTOR BOATS.—10 in number (some armoured), 40 tons, 14 knots.

ARMED MOTOR LAUNCHES.—7 in number, 30–50 tons.

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* Under the control of Germany.

THAILAND.

Cruisers.—2 in number, building at Trieste, 4,200 tons, 45,000 S.H.P., 30 knots, 6 5·9-in., 6 3-in. A.A., 2 triple 18-in. torpedo tubes.

Destroyer.—**Phra Ruang** (ex-British Radiant, Thornycroft, 1917), 718 tons, 29,000 S.H.P., 35 knots, 3 4-in., 1 2-pdr. pom pom., 1 M., 2 double 21-in. torpedo tubes.

Torpedo Boats.—**Jumbara, Pattani, Surasdra, Chandaraburi,** and **Rayong** (Monfalcone, 1937), 470 tons, 10,000 S.H.P., 31 knots, 3 3-in. A.A., 4 ·8-in. M., 6 18-in. torpedo tubes; **Puket** and **Trad** (Tireste, 1936), 380 tons, 9,000 S.H.P., 31 knots, 3 3-in. A.A., 4 ·8-in. M., 6 18-in. torpedo tubes. Three in number building at Trieste.

Motor Torpedo Boats.—6 in number (Thornycroft, 1930–35), 55 ft., 13·5 tons. A number building.

Submarines.—**Blai Jumbol, Sinsamudr, Machanu Virun** (Mitsubishi, 1938), 325 tons, 14·5/8 knots, 1 M., 5 21-in. torpedo tubes, complement 24. Four others projected.

Gunboats.—**Dhamburi** and **Sri Ayudhya** (Kobe, 1938), 2,000 tons, 15·5 knots, 4 8-in., 4 3-in.; **Sukhodaya** (Vickers, 1930), 890 tons, 13 knots, 2 6-in., 4 3-in. A.A., 2½-in. armour belt; **Mongkut Rajakumarn** (ex-Filipinas, Hong Kong and Whampoa Doca Co., 1887), 700 tons, 11 knots, 2 4·7-in., 2 6-pdr., 3 3-pdr.; **Sugbrib** (1901), 410 tons, 11·5 knots, 1 4·7-in., 5 6-pdr., 2 M.; **Suriya Monthon** (Thornycroft, 1908), 190 tons, 14·5 knots, 1 6-pdr., 4 M.; **Ratnakosindr** (Armstrong, 1925), 890 tons, 12 knots, 2 6-in., 4 3-in. H.A., 2½-in. armour belt.

Minelayers.—**Bang Rachan** (S1) and **Nong Sarai** (S2) (Monfalcone, 1936), 368 tons, 12 knots, 2 3-in., 140 mines. A third vessel is building at Ancona.

Patrol Boats.—**Klongyai, Takbai,** and **Kantang** (Yokohama, 1937), 110 tons, 18 knots, 1 3-in., 3 ·8-in. M., 2 18-in. torpedo tubes. Twelve in number building, 100 tons.

Training Ships.—**Tachin** and **Maeklong** (Uraga, 1937), 1,400 tons, 17 knots, 4 4·7-in., 2 ·5-in. M. A.A., 2 double 12-in. torpedo tubes, 20 mines; **Chao Phra** (ex-British Havant, 1918), 700 tons, 16 knots. Two others projected.

Survey Ships.—**Cuong, Han Thale, Lieu Thale,** and **Chen Thale,** 400 tons, 8 knots.

Fishery Protection Vessels.—**Sara Sindhu, Thiew Uthok, Travane Vari** (Bangkok, 1936), 50 tons, 9·5 knots, 1 1·5-in. Three others buiding.

Tug.—**Samet** (ex-Pi-Sua-Nam), 90 tons, 9·5 knots.

Transports.—**Angthong** (ex-Maha Chakkri, Kawasaki, 1918), 2,700 tons, 15 knots, 4 3-in.; **Chang** (ex-Vides Kichkar, Maryport, 1902), 750 tons, 9·5 knots; **Pagan** and **Sichaun** (Harima, 1938), 650 tons.

Oil Tanker.—**Samui** (Hakodate, 1936), 1,800 tons, 12 knots. One other projected.

TURKEY.

BATTLE CRUISER.—**Yavouz Sultan Selim** (ex-Goeben, Hamburg, 1912), 22,734 tons, 52,000 S.H.P., 27 knots, 10 11-in., 10 5·9-in., 8 3·5-in., A.A., 14 1·5-in. m.p.p., 4 M., 4 19·7-in. torpedo tubes, complement 1,000.

CRUISERS.—**Hamidieh** (Armstrong, 1904), 3,790 tons, 12,000 H.P., 22 knots, 2 5·9-in., 6 3-in., 8 3-in. H.A., 2 18-in., torpedo tubes, 70 mines; **Medjidieh** (ex-Russian Prutt, Cramp, 1904), 3,300 tons, 12,000 H.P., 22 knots, 4 5·1-in., 2 3-in. H.A., 4 M. Two in number projected, 8,000 tons.

DESTROYERS.—**Kocatepe** and **Adatepe** (Ansaldo, 1932), 1,300 tons, 38,000 S.H.P., 38 knots, 4 4·7-in., 3 2-pdr. H.A., 3 M., 6 21-in. torpedo tubes, 40 mines; **Tinaztepe** and **Zafer** (Riva Trigoso, 1932), 1,840 tons, 50,000 S.H.P., 38 knots, 4 4·7-in., 3 2-pdr. A.A., 2 triple 21-in. torpedo tubes; **Sultan Hisar** and **Demir Hisar** (Denny Bros., 1941), **Muavenet** and **Gayret** (Vickers, 1941), 1,370 tons, 34,000 S.H.P., 35 knots, 4 4·7-in., 6 1·5-in. A.A., 2 quadruple 21-in. torpedo tubes.

TORPEDO BOATS.—**Berk** (ex-Berkisatvet) and **Peyk** (ex-Peikishevket, Kiel, 1907), 830 tons, 20 knots, 2 6-in., 4 6-pdr., 2 1-pdr., 2 M., 3 18-in. torpedo tubes, 30 mines.

MOTOR TORPEDO BOATS.—A number building.

PATROL MOTOR BOATS.—**Doghan, Marti,** and **Deniz Kouchou** (Venice, 1932), 31 tons, 34 knots, 1 3-in., 1 1-in. pom pom., 2 18-in. torpedo tubes, 6 depth charge throwers. Six in number building.

SUBMARINES.—**Burak Reis, Murat Reis, Uluc Ali Reis, Oruc Reis** (Vickers, 1941), 624/856 tons, 1,200/708 H.P., 13·7/8·4 knots, 1 4-in., 3 M., 5 21-in. torpedo tubes; **Atilay, Yildiray** (Istanbul, 1941), **Saldiray** (Kiel, 1939), 820/1,100 tons, 4,800 H.P., 20/9 knots, 1 4-in., 6 21-in. torpedo tubes, 40 mines; **Dumlupinar** (Monfalcone, 1932), 935/1,220 tons, 2,400/1,400 H.P., 15/9·5 knots, 1 4-in. H.A., 3 M., 4 21-in. torpedo tubes, 40 mines; **Gur** (Cadiz, 1931), 750/260 tons, 2,800/1,000 H.P., 20/9 knots, 1 6-in., 1 ·8-in. M., 6 21-in. torpedo tubes; **Inönü I** and **Inönu II** (Rotterdam, 1928), 433/556 tons, 1,100 H.P., 13·5/8·5 knots, 1 3-in. H.A., 1 M., 6 17·7-in. torpedo tubes; **Sakarya** (Monfalcone, 1932), 610/940 tons, 1,500/1,100 H.P., 14·5/9·3 knots, 1 4-in., 1 ·8-in M., 6 21-in. T.T.

SUBMARINE DEPOT SHIPS.—**Erkin** (ex-S.S. Trier, Bremen, 1923), 16,000 tons, 12·5 knots, 2 M.; **Akin** (ex-Rasit, Smith's Dom Co., 1913), 33 tons, 12 knots; **Marmora** (ex-R.S. Syria, 1906), 1,500 tons.

MINESWEEPERS.—**Hizar Reis, Issa Reis,** and **Kemal Reis** (La Seyne, 1912), 443 tons, 14 knots, 3 3-in., 2 3-pdr., 2 M. Twenty others.

MINELAYERS.—**Sivri Hisar** and **Yuzbashi Hakki** (Thornycroft, 1940), 350 tons, 15 knots, 1 3-in., 80 mines; **Atak** and **Dalgital** (Ismidt, 1940, 1941), 500 tons, 13 knots, 40 mines; **Nusret** (ex-Yardim, Kiel, 1913), 360 tons, 15 knots, 2 M., 25 mines; **Uyanik** (ex-Intibah, Port Glasgow, 1886), 600 tons, 12 knots, 50 mines. Sixteen others.

OIL TANKER.—**Gölcük** (Ismidt, 1937), 1,400 tons, 10 knots, 750 tons capacity.

YACHTS.—**Gunes Dil** (ex-Savarona, Hamburg, 1931), 5,700 tons, 21 knots, 2 3-pdr.; **Ertougrul** (Armstrong, 1903), 900 tons, 21 knots, 8 3-pdr.; **Acar.**

GUNBOAT.—**Aidin Reis** (St. Nazaire, 1913), 502 tons, 14 knots, 2 4-in., 2 6-pdr., 4 M.

DEPOT SHIP.—**Torghud Reis.**

URUGUAY.

TORPEDO GUNBOAT.—**Uruguay** (Stettin, 1910), 1,150 tons, 23 knots, 2 4·7-in., 4 3-in., 6 1-pdr., 4 M., 2 18-in. torpedo tubes.

PATROL BOATS.—**Paysandu, Salto,** and **Rio Negro** (Ancona, 1935), 150 tons, 16 knots, 2 3-in., 2 M.

SURVEYING SHIPS.—**18 De Julio** (Leith, 1879), 680 tons, 12 knots, 2 M.; **Capitan Miranda** (Cadiz, 1930), 516 tons, 12 knots.

TUGS.—**Zapican** (ex-Atlantico, 1911), 162 tons, 10 knots; **Vanguardia** (Glasgow, 1908), 95 tons, 12 knots, 2 1·5-in.; **Corsario** (1888), 130 tons, 10 knots, 3 1·5-in.; **Huracán** (ex-Fortuna, 1879), 197 tons, 12 knots.

TRAINING SHIP.—**Aspirante** (ex-Exir Dallen, 1919), 250 tons, auxiliary motor.

VENEZUELA.

MINELAYERS.—**General Soublette** (ex-Italian Dardanelli) and **General Urdaneta** (ex-Italian Milazzo) (Monfalcone, 1926), 615 tons, 15 knots, 2 4-in., 1 3-in. H.A., 80 mines.

GUNBOATS.—**Mariscal Sucre** (ex-Isla de Cuba, 1886), 1,125 tons, 10 knots, 2 6-in., 2 6-pdr., 6 3-pdr., 2 1-pdr., 1 M.; **General Salom** (ex-U.S. Atlanta, 1884), 750 tons, 12 knots, 1 3-in., 4 6-pdr., 2 M.; **Miranda** (Clydebank, 1895), 200 tons, 10 knots, 5 6-pdr.; **Brion,** 150 tons.

TUGS.—**Aragua** (ex-Caroni), 154 tons, 7 knots, 1 M.; **José Felix Ribas** (ex-Zumbador, 1894), 300 tons, 10 knots, 2 6-pdr., 1 M.

RIVER GUNBOATS.—2 in number.

YACHTS.—**Maracay** (1902), 800 tons, 8 knots, 2 3-in., 2 A.A., 1 M.; **Leandro** (ex-Dr. Brinkley, U.S.A., 1925), 320 tons, 18 knots, 2 1·46-in.

YUGOSLAVIA.*

DESTROYERS.—**Premuda** (ex-Dubrovnik) (Yarrow, 1932), 1,880 tons, 42,000 S.H.P., 37 knots, 4 5·5-in., 2 3·4-in., 6 1·5-in. A.A., 4 2-pdr., 2 triple 21-in. torpedo tubes, 2 depth charge throwers, 40 mines; **Beograd** (Nantes, 1939), **Sebenico** (ex-Ljubljana) (Split, 1939), 1,190 tons, 40,000 S.H.P., 38 knots, 4 4·7-in., 4 1·57-in. A.A., 2 triple 21-in. torpedo tubes, 30 mines; 1 in number (building at Split), 1,875 tons, 38 knots, 5 5·5-in., 10 1·57-in. A.A., 2 M., 6 21-in. torpedo tubes. Two others building.

TORPEDO BOATS.—**T. 1–8** (ex-Austrian, 1913–15), 200 tons, 5,000 S.H.P., 28 knots, 2 2·5-in. A.A., 2 M., 2 21-in. torpedo tubes.

MOTOR TORPEDO BOATS.—**Durmitor, Dinara, Kajmakcalan, Orsen, Rudnik, Suvobor, Triglav,** and **Velebit** (Bremen, 1936–37), 92 ft., 62 tons, 34 knots, 1 1·57-in. A.A., 2 21-in. torpedo tubes; **Cetnik** and **Uskok** (Thornycroft, 1927), 59 ft., 13 tons, 40 knots, 1 M., 2 18-in. torpedo tubes.

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* Under the control of Germany.

SUBMARINES.—**Hrabri** and **Nebojsca** (Armonstrong, 1928), 870/1,146 tons, 2,400/1,600 B.H.P., 15/10 knots, 2 4-in., 6 21-in. torpedo tubes; **Smeli** and **Osvetnik** (Nantes, 1929), 570/797 tons, 1,480/1,120 S.H.P., 14·5/9·2 knots, 1 4-in., 1 2-pdr. A.A., 1 m., 6 21-in. torpedo tubes.

RIVER MONITORS.—**Varda** (ex-Austrian Bosnia, Budapest, 1916), 530 tons, 13 knots, 2 4·7-in., 2 4·7-in. howitzers, 3 2·6-in A.A., 2 1·85-in., 8 M.; **Drava** (ex-Austrian Enns, Budapest, 1915), 450 tons, 13 knots, 2 4·7-in., 2 4·7-in. howitzers, 2 2·6-in. A.A., 7 M.; **Sava** (ex-Austrian Bodrog, Budapest, 1904), 380 tons, 13 knots, 2 4·7-in., 1 4·7-in. howitzer, 1 2·6-in. A.A., 1 2·6-in. howitzer, 5 M.; **Morava** (ex-Austrian Koros, Budapest, 1892), 390 tons, 9 knots, 2 4·7-in., 2 9-pdr., 3 M.

MINELAYERS.—**Galeb, Jastreb, Kobac, Labud, Orao, Sokol** (ex-German M class, 1918–19), 330 tons, 15 knots, 2 3·9-in. H.A., 2 M., 40 mines.

MINESWEEPERS.—**Malinska**, **Marjan**, **Meljine**, **Mljet**, and **Mosor** (Yarrow, Kraljevica, 1931–32), 130 tons, 9 knots, 1 2·5-in. A.A. **D2** (ex-Austrian, 1889), 78 tons, 17 knots, 2 1·45-in., 1 M.

SEAPLANE TENDER AND DEPOT SHIP.—**Zmaj** (Hamburg, 1929), 1,870 tons, 15 knots, 1 4-in. A.A., 10 seaplanes.

SUBMARINE DEPOT SHIP.—**Hvar** (ex-Vintali, Sunderland, 1896), 2,000 tons, 13 knots; **Sitnica** (ex-Najade, 1891), 370 tons, 9 knots, 2 3-pdr.

SALVAGE VESSEL.—**Spasilac** (Kiel, 1930), 740 tons, 15 knots.

TRAINING SHIP.—Three masted schooner **Jadran** (Hamburg, 1933), 710 tons, auxiliary motor, 8 knots, 2 2-pdr.

YACHTS.—**Vila** (ex-Dalmata, 1896), 230 tons, 12 knots; **Dragor** (1928) 250 tons, 20 knots.

TUGS.—**Jaki** (1915), 360 tons, 15 knots, 2 1·85-in.; **Mocni** (Antwerp, 1939), 260 tons, 11 knots, 2 1·85-in.; **Silni** (1914), 200 tons, 10 knots, 2 1·85-in.; **Marljivi** (1898), 130 tons, 10 knots; **Snazni**, 100 tons, 10 knots; **Ustrajni** (1917), 160 tons, 9 knots; **Cer** (1909), 250 tons, 15 knots, 2 M.; **Sisak** (ex-Triglav, 1915), 90 tons, 11 knots, 2 M.; **Sabak** (ex-Avala), 90 tons, 8 knots, 2 M.

PATROL BOATS.—**Granicar** and **Strazar** (1929), 36 tons, 9 knots, 1 3-pdr.

BRITISH AND FOREIGN FLOTILLAS.

Great Britain.

Name or Number.	Built by.	Completed.	Dimensions. Length (Extreme).	Beam.	Draught.	Number of Screws.	Standard Displacement.	Horse-Power.	Mean Speed on Trial, or expected.	Armament.	Torpedo Tubes.	Complement (War).
				FLOTILLA LEADERS.								
			ft. ins.	ft. ins.	ft. ins.		Tons.		Knots.			
Tribal Class :												
Two in number ..	Building in Canada		..	36 6	..	2	1870	44,000	36½	6 4·7-in., 2 4-in. guns, 7 smaller.	1Q. 21″	200
Ashanti	Denny	1938										
Eskimo	Vickers, Walker	1938										
Matabele ..	Scotts	1939										
Tartar	Swan Hunter ..	1939										
Maori	Fairfields ..	1938										
Nubian	Thornycroft ..	1938										
Inglefield	Cammell Laird	1937	..	34 0	..	2	1530	38,000	36¼	5 4·7-in., 1 4-in. 2 ·5-in. M. 5 smaller	1 Q. 21″	175
Faulknor	Yarrow ..	1935	343	33 9	8 8	2	1460	38,000	36½			125
Duncan	Portsmouth Dockyard	1933	329	33 0	8 8	2	1400	36,000	35¾	4 4·7-in., 1 4-in. 1 3-in. A.A.	1 Q. 21″	175
Codrington ..	Swan Hunter ..	1930	345·0	33·9	10.0	2	1540	39,000	35	5 4-in, 2 2-pdr. 1 M., 4 L.	1 Q. 21″	
Wallace	Thornycroft ..		329	31 11	12 4	2	1480	40,000	36	5 4·7-in. 1 3-in. A.A. 2 2-pr. A.A. 1 M., 4 L.	2 T. 21″	183
Keppel	Portsmouth ..	1925										
Broke, *ex*-Rooke	Thornycroft .	1925										
Douglas	Cammell Laird ..	1918	332 6	31 9	12 3	2	1530	40,000	36·5	5 4·7-in. 1 3-in. A.A. 2 2-pr. A.A. 1 M., 4 L.	2 T. 21″	182
Campbell		1918										
Mackay, *ex*-Claverhouse .		1919										
Malcolm		1919										
Montrose	Hawthorn Leslie	1918										

† Escort vessel armed with 4-in. guns.

Name or Number.	Built by.	Completed.	Dimensions. Length. (Extreme.)	Beam.	Draught.	Number of Screws.	Standard Displacement.	Horse-Power.	Mean Speed on Trial, or expected.	Armament.	Torpedo Tubes.	Complement (War).
			Feet.	ft. ins.	ft. ins.		Tons.		Knots.			
Rotherham, Quilliam, Pakenham, Onslow, Napier, Milne, Laforey, Kelly, Javelin, Intrepid, Hero, Greyhound, Fearless, Eclipse, Defender, Beagle, & Acasta Classes:												
Savage ..	**Hawthorn Ceslie** ..	..	..	..	..	..	..	..	..	..	..	..
Saumarez ..												
Scorpion ..												
Scourge ..												
Racehorse												
Raider ..												
Rapid ..												
Redoubt ..												
Relentless ..												

Torpedo tubes : T. = triple. Q. = quadruple.

Great Britain—*continued.*

Name or Number.	Built by.	Completed.	Dimensions. Length (Extreme.)	Beam.	Draught.	Number of Screws.	Standard Displacement.	Horse-Power.	Mean Speed on Trial, or expected.	Armament.	Torpedo Tubes.	Complement (War).
			Feet.	Feet.	Feet.		Tons.		Knots.			
DESTROYERS—												
Rotherham etc. Classes												
Rotherham Quadrant Quail .. Quality .. Quiberon .. Quickmatch Quilliam .. Paladin .. Pathfinder Penn .. Petard .. Porcupine.. Obdurate .. Obedient .. Onslaught Onslow ..	Hawthorn Leslie ..											
Opportune Oribi .. Orwell ..	Thornycroft ..											
Napier (leader) Nerissa .. Nizam .. Norman .. Norseman..	Fairfield .. .. John Brown .. Thornycroft ..	1941–42	..	..	..	..	..	..	..	6 4·7-in.	..	..
Milne (leader) Marksman Marne .. Martin .. Matchless Meteor .. Musketeer Myrmidon	Scotts .. .. Parsons (Hulls by Vickers .. .. Stephens .. .. Fairfields	1941-42	..	..	..	..	1920	48,000	36	6 4·7-in.	8 21″	..
Laforey (leader) .. Larne .. Legion .. Lookout .. Loyal ..	Yarrow .. .. Cammell Laird .. Hawthorn Leslie Scotts	1941 1941 1941 1941	.. ..	.. ..	.. ..	.. ..	1935 1920	48,000	36	6 4·7-in.	8 21″	..
Lance .. .. Khartoum .. Kelvin .. .. Kimberley ..	Swan Hunter .. Fairfied .. Thornycroft	1939	..	35 0	..	..	1690	40,000	36	6 4·7-in. guns 7 smaller	10 21″	183
Janus .. .. Javelin .. .. Offa .. .. Jervis (leader) ..	Swan Hunter J- Brown Hawthorn Leslie	1939	..	35 0	..	..	1690	40,000	36	6 4·7-in. guns 7 smaller	10 21″	183
Icarus .. Ilex .. Isis .. Impulsive.. Inconstant	J. Brown .. Yarrow .. J. S. White	1937	323	33	8½	2	1370	34,000	36	4 4·7-in. 1 4-in. guns 7 smaller	5 21″	145
Hotspur	Scotts	1936	323	33 0	8 6	2	1340	34,000	36	4 4·7-in. 1 4-in. 7 smaller	1 Q. 21″	145
Gallant ..	Stephen & Sons	1936	323	33 3	8 6	2	1335	34,000	36	4·7-in. 1 4-in. 2·5-in. M.G. 5 smaller	1 Q. 21″	145
Forester .. Fury .. Fame ..	J. S. White Parsons/Vickers-Armstrong	1935	329	33 3	8 6	2	1350	36,000	36	4 4·7-in. 1 4-in. 2·5-in. M.G 5 smaller	1 Q. 21″	145
Echo.. Escapade(leader) Encounter	Denny .. Swan Hunter Hawthorn Leslie	1934	329	33 3	8 6	2	1375	36,000	36	4 4·7-in. 1 4-in. 2·5-in. M.G. 5 smaller	1 Q. 21″	145
Beagle .. .. Boadicea .. .. Brilliant .. Bulldog ..	Brown .. Hawthorn Leslie Palmers .. Swan, Hunter	1931	323	32½	8½	2	1360	34,000	35½	4 4·7-in. 1 4-in. 2 2-pr. 1 M,. 4 L.	1 Q. 21″	140

Torpedo tubes: T. = triple. Q. = quadruple.

Great Britain—*continued.*

Name or Number.	Built by.	Completed.	Dimensions.			Number of Screws.	Standard Displacement.	Horse-Power.	Mean Speed on Trial, or expected.	Armament.	Torpedo Tubes.	Complement (War).
			Length. (Extreme.)	Beam.	Draught.							
Destroyers—			Feet.	Feet.	Feet.		Tons.		Knots.			
Rotherham, etc., Classes.												
Active	Hawthorn Leslie	1930	323	32¼	8¼	2	1350	34,000	35½	4 4·7-in., 1 4-in. 2 2-pr., 1 M., 4 L.	1 Q. 21"	140
Antelope	"	1930										
Anthony	Scotts	1930										
Arrow	Vickers-Armstrong	1930										
Thornycroft Type:												
Amazon	Thornycroft ..	1927	323	31½	9	2	1350	39,500	37	4 4·7-in., 2 2-pr. 1 M., 4 L.	2 T. 21"	140
Yarrow Type:												
Ambuscade ..	Yarrow	1927	322	31	8½	2	1170	33,000	37		5 21"	
Admiralty "S" Class:												
Saladin	Stephen	1919	276	26⅔	10⅝	2	905	27,000	36	3 4-in., 1 2-pr., 1 M., 4 L.	2 D. 21"	103
Sabre	"	1918										
Sardonyx ..	"	1919										
Scimitar	Brown	1918										
Thanet	Hawthorn Leslie ..	1919										
Thracian	" ..	1922										
Stronghold ..	Scott	1919										
Scout	Brown	1918										
Shikari	Doxford Chatham	1924										
Admiralty "V" Class:												
Vansittart ..	Beardmore ..	1919	312	29½	10¾	2	1120	27,000	34	4 4·7 in., 1 4-in. 2 2-pr., 1 M., 4 L.	1 T.	130
Venomous ..	Brown	1919										
Verity	"	1919										
Volunteer.. ..	Denny	1919										
Wanderer.. ..	Fairfield	1919										
Whitshed ..	Swan Hunter ..	1919	312	29½	10¾	2	1120	27,000	34			
Witherington ..	J. S. White ..	1919										
Wivern	" ..	1919										
Wolverine ..	" ..	1920										
Worcester.. ..	" ..	1922										
Whitehall.. ..	Swan Hunter Chatham..	1925										
Walpole	Palmer	1918	312	29½	10⅜	2	1100	27,000	34			
Windsor	Scott	1918										
Wrestler	Swan Hunter ..	1918										
†Winchester ..	J. S. White ..	1918								4 4-in., 1 2-pr., 1 M., 4 L.	2 T.	120
†Wolfhound ..	Fairfield	1918										
†Westminster ..	Scott	1918										
Westcott	Denny	1918	312	29½	10·7	2	1100	27,000	34	4 4-in., 1 2-pr., 1 M., 4 L.,	2 T. 21"	120
Walker	Denny	1918										
Warwick	Hawthorn Leslie ..	1918										
Watchman ..	Brown	1918										
Winchelsea ..	J. S. White ..	1918										
Vanessa	Beardmore ..	1918										
†Vanity	" ..	1918										
Vidette	Stephen	1918										
Vimy (*late* Vancouver)	Beardmore ..	1918								4 4-in., 1 2 pr., 1 M., 4 L.	1 T. 1 D.	
Vanoc	Brown	1917								4 4-in., 1 2-pr., 1 M., 4 L.	3	
Vanquisher ..	"	1917	312	29½	10⅝	2	1090	27,000	34	4 4-in., 1 2-pr., 1 M., 4 L.	2 T.	
Velox	"	1918									1 T.,	
†Verdon	Hawthorn Leslie ..	1917									1 D.	
Versatile	" ..	1918									2 T.	
Vesper	Stephen	1918								4 4-in., 1 2-pr. 1 M., 4 L.	2 T.	
Vivacious ..	Yarrow	1917									1 T. 1 D.	
Thornycroft "V" Class:												
Witch	Thornycroft Devonport	1924	312	30½	10·9	2	1140	30,000	35	4 4·7-in., 2 2-pr., 1 M., 4 L.	2 T.	130
Wishart	Thornycroft ..	1920									-	
Viceroy	" ..	1918								4 4-in., 1 2-pr., 1 M., 4 L.	2 T.	120
Viscount	" ..	1918	312	30½	10½	2	1120	30,000	35			

Torpedo tubes: D. = double. T. = triple. † Escort vessels armed with 4-in. guns.

Great Britain—*continued.*

Name or Number.	Built by.	Completed.	Dimensions. Length (Extreme).	Dimensions. Beam.	Dimensions. Draught.	Number of Screws.	Standard Displacement.	Horse-Power.	Mean Speed on Trial, or expected.	Armament.	Torpedo Tubes.	Complement (War).
DESTROYERS—			Feet.	Feet.	Feet.		Tons.		Knots			
Admiralty "R" Class												
Skate	Brown	1917	276– 276½	26¾	10¾	2	900	27,000	36	3 4-in., 1 2-pr., 1 M., 4 L.	2 D. 21"	98
Hunt Class:												
Atherstone	Cammell Laird	1940										
Albrighton												
Aldenham												
Avon Vale												
Badsworth												
Beaufort												
Belvoir												
Bicester												
Blankney												
Bleasdale												
Blencathra												
Bramham												
Brecon												
Brocklesby												
Calpe												
Catterick												
Cattistock	Yarrow	1940										
Chiddingfold												
Cleveland	Yarrow	1940										
Cotswold	Yarrow	1940										
Cottesmore	Yarrow	1940										
Cowdray												
Croome												
Derwent	Vickers-Armstrong	1942										
Easton												
Eglinton	Vickers-Armstrong	1940										
Eggesford												
Eridge												
Exmoor												
Farndale	Swan Hunter	1940										
Fernie	Clydebank	1940	270	..	..	2	900	19,000	27½	4 4-in. H.A.	..	..
Garth	„	1940										
Goathland												
Grove												
Haldon												
Hambledon	Swan Hunter	1940										
Hatherleigh												
Haydon												
Holcombe												
Holderness	Swan Hunter	1940										
Hursley												
Lamerton												
Lauderdale												
Ledbury												
Liddesdale												
Melbreak												
Mendip	Swan Hunter	1940										
Meynell	„	1940										
Middleton												
Modbury												
Oakley												
Pytchley	Scotts	1940										
Quantock	„	1940										
Quorn	White	1940										
Rockwood												
Southdown	White	1940										
Stevenstowe												
Talybont												
Tanatside												
Tetcott												
Tynedale	Stephen	1940										
Wensleydale												
Whaddon	Stephen	1940										
Wheatland												
Wilton												
Zetland												

Great Britain—*continued.*

Name or Number.	Built by.	Completed.	Dimensions.			Number of Screws.	Standard Displacement.	Horse-Power.	Mean Speed on Trial, or expected.	Armament.	Torpedo Tubes.	Complement (War).	Fuel. Oil.
			Length (Extreme.)	Beam.	Draught.								
			Ft.	Ft.	Ft.		Tons.		Knots.				
DESTROYERS—													
Town Class (ex U.S.N.) :													
Churchill (*ex*-Herndon) .. Chesterfield (*ex*-Wood) .. Clare (*ex*-Upshur) .. Broadway (*ex*-Hunt) .. Burnham (*ex*-Alden) ..	Newport News S.B. Co. ..	1919-1920	314 4	31	9·8	2	1,190	25,000	35	4 4-in., 1 3-in. A.A.	4 Trip. 21-in.	122	375
Cameron (*ex*-Welles) .. Bradford (*ex*-McLanahan) Burwell (*ex*-Laub) .. Buxton (*ex*-Edwards) .. Sherwood (*ex*-Rodgers) .. Ramsey (*ex*-Meade) .. Reading (*ex*-Bailey) .. Ripley (*ex*-Shubrick) .. Rockingham (*ex*-Swasey) *St. Croix (*ex*-McCook) .. *St. Francis (*ex*-Bancroft)	Bethlehem S.B. 6	1919	314·4	31	9·8	2	1,190	27,000	35	4 4-in., 1 3-in. A.A.	4 Trip. 21-in.	122	375
Caldwell (*ex*-Hale) .. Castleton (*ex*-A. Ward) .. Lancaster (*ex*-Philip) .. Mansfield (*ex*-Evans) .. Montgomery (*ex*-Wickes) Wells (*ex*-Tillman) ..	Bath I.W.	1919–1921	314·4	31	9·5	2	1,090	24,000	35	4 4-in., 1 3-in. A.A.	4 Trip. 21-in.	122	286
Salisbury (*ex*-Claxton) ..	Mare Island	1919											
Richmond (*ex*-Fairfax) ..	Union I.W...	1918											
Leamington (*ex*-Twiggs)..	New York ..	1919	314·4	31	9·5	2	1,090	24,000	35	4 4-in., 1 3-in. A.A.	4 Trip. 21-in.	122	286
Lincoln (*ex*-Yarnall) ..	Cramp ..	1918											
*Hamilton (*ex*-Kalk) .. Georgetown (*ex*-Maddox) Brighton (*ex*-Cowell) .. Roxborough (*ex*-Foote) .. Newport (*ex*-Sigourney) .. *Niagara (*ex*-Thatcher) ..	Fore River S.B. Co.	1918–1920	314·4	31	9·8	2	1,060	27,000	35	4, 4-in., 1 3-in. A.A.	4 Trip. 21-in.	122	283
Charlestown (*ex*-Abbot) .. St. Albans (*ex*-Thomas) .. St. Mary's (*ex*-Doran) .. *Columbia (*ex*-Haraden) ..	Newport News S.B.6.												
Newark (*ex*-Ringgold) .. Newmarket (*ex*-Robinson) *Annapolis (*ex*-Mackenzie)	Union I.W.												
*St. Clair (*ex*-Williams) ..	Union Plant												
Leeds (*ex*-Connor) .. Ludlow (*ex*-Stockton) .. Lewes (*ex*-Conway) ..	Cramp	1918	315·5	30·7	9·5	3	1,020	18,500	30	4 4-in., 1 3-in. A.A.	4Trip. 21-in.	122	260

* Royal Canadian Navy.

Great Britain—*continued.*

SUBMARINES.

Name or Number.	Where Built.	Completed.	Dimensions.			No. of Screws.	Displacement.	Horse-Power.	Maximum Speed.	Armament.	Torpedo Tubes.	Complement (War).
			Length (Extreme).	Beam.	Draught.							
			Feet.	Feet.	Feet.		Tons.		Knots.			
P31												
Unity Class :												
Ursula ..	Vickers ..	1938	180	16·1	12·9	..	540/730	615/825	11¼/10	2 small guns	6	27
Upright ..												
Thunderbolt Class :												
Torbay ..	Chatham ..	1940	..	..	..	..	1,090/1,575	..	..	4-in.	..	..
Triumph ..	Cammell Laird	1939	265	26½	12	..	1,090/1,575	2,500/1,450	15¼/9	1 4-in. gun	6	53
Trident ..												
Tribune ..												
Taku	Cammell Laird											
Truant ..	Vickers	1939										
Tuna	Scott's											
Thrasher ..	..	..	..	..	..	..	..	..	..	..	..	..
Trusty ..												
Tempest ..												
Thorn ..												
Thames Class :												
Severn ..	Vickers-Armstrong	1935	345	28	13·7	2	1,850/2,723	10,000/2,500	22¼/10	1 4-in., 2 smaller	..	60
Clyde												
*Porpoise Class :**												
Porpoise ..	Vickers-Armstrong	1933	289	29·8	13·8	..	1,500/2,053	3,300/1,630	15/8¾	1 4-in., 2 smaller	6	55
Rorqual ..	Vickers	1935	271½	25½	15	2	1,520/2,157	3,300/1,630	15¾/8¾	1 4-in., 2 smaller	6	55
Swordfish Class :												
Sunfish ..	Chatham ..	1937	208·7	24	10·5	2	670/960	1,550/1,300	13¾/10	3-in., 1 smaller	6	40
Seawolf ..	Scott's	1934										
Sealion ..	Cammell Laird ..	1938										
Sturgeon ..	Chatham ..	1933	202·5	24	10·5	2	640/927	1,550/1,300	13¾/10			
Rainbow Class :												
Rover ..	Vickers-Armstrong	1931	290	29·8	13·8	2	1,475/2,035	4,400/1,320	17½/9	1 4-in., 2 smaller	8	53
Parthian Class :												
Proteus ..	Vickers-Armstrong ..	1930	290	29·8	13·7	..	1,475/2,040					
Pandora ..												
Odin Class :												
Osiris	Vickers	1929	283½	29·8	13·7	..	1,475/2,038	4,400/1,320	17½/9	1 4-in., 2 Lewis	8	53
Otus	Vickers	1929										
Oberon Class :												
Oberon ..	Chatham ..	1927	270	28	13·2	..	1,311/1,830	2,950/1,350	15/9	1 4-in., 2 Lewis	8	53
Otway ..	Vickers	1927	275	27·7	13·3	..	1,354/1,872	3,000/1,350	15½/9	1 4-in., 2 Lewis	8	93
***L** Class :*												
L27	Vickers	1926	238½	23½	11·7	..	760/1,080	2,400/1,600	17½/10½	1 4-in., 1 Lewis	4	41
L26	Vickers	1926										
L23	Vickers	1924										
***H** Class :*												
H50	Beardmore ..	1920	171	15·75	12·5	2	410/500	480/320	13/10½	1 Lewis	4	23
H44	Armstrong ..	1920										
H43	Armstrong ..	1919										
H34	Cammell Laird ..	1919										
H33	Cammell Laird ..	1919										
H32	Vickers	1919										
H28	Vickers	1918										

* Minelaying submarines.

Great Britain—*continued.*

Name.	Displacement.	Length (Extreme).	Beam (Extreme).	Draught.	Horse Power.	Where built.	Maker of Machinery.	Date of Launch.	Date of Completion.	Armament.	Speed (knots).	Complement.
SLOOPS.		ft. ins.	ft. ins.	ft. ins.								
Egret Class:												
Wren	..	..	..	..	..	..	..	..	1942			
Erne	1250		..	..	4,300	Furness	Richardson Westgarth	..	1941	6 4-in. H.A. 10 smaller		
Ibis												
Auckland	1200	282	37 6	8 4	3,600	Denny	Denny	1937	1938	8 4-in., 5 smaller	19¼	188
Pelican						Thornycroft	Thornycroft	1938	1939			
Black Swan	12	..	..	..	4,300	Yarrow	Yarrow	1939	1940	6 4-in. H.A. 10 smaller	19¾	
Flamingo												
Enchantress	1085	282	37 0	8 6	3,300	J. Brown	J. Brown	1934	1935	4 4·7-in. guns and 2 on deposi 4 3-pr.	18¾	125
Stork	1100	282	37 0	8 6	3,300	Denny	Denny	1936	1936	6 4·7-in. guns 2 3-pr. 5 smaller	18¾	..
Kingfisher Class:												
Kingfisher	510	234 b.p.	26 6	6 6	3,600	Fairfield	Fairfield	1935	1935	1 4-in. gun 8 smaller	20	60
Mallard						Stephen	Stephen	..	1936			
Puffin						Stephen	Stephen	..	1936			
Sheldrake	530	234 b.p.	26 6	6 6	3,600	Thornycroft	Thornycroft	..	1937			
Kittiwake						Thornycroft	Thornycroft	..	1937			
Widgeon						Yarrow	Yarrow	..	1938			
Guillemot	580	..	..	..	..	Denny	Denny	..	1939			
Shearwater	580	..	..	..	..	J. S. White	J. S. White	..	1939			
P.C.74	610	247	26 9	8 0	3,500	J. S. White	J. S. White	1918	1918	1 12-pr.	20	..
Cygnet ..												
Whimbrel												
Starling												
Woodpecker												
Wild Goose												
Kite ..												
CORVETTES.												
Flower Class:												
Abelia	925	..	..	..	..	..	..	..	..	1 4-in. 1 M.P.P.	..	78–85
Alisma												
Amaranthus												
Anchusa												
Anemone												
Arabis												
Armeria												
Asphodel												
Aster												
Aubrietia												
Azalea												
Balsam												
Bellwort												
Bergamot												
Bluebell												
Borage												
Bryony												
Burdock												
Buttercup												
Calendula												
Camelia												
Campion												
Carnation												
Celandine												
Chrysanthemum												
Clarkia												
Clematis												
Clover												
Coltsfoot												
Columbine												
Convolvulus												
Coreopsis												
Cowslip												
Crocus												
Cyclamen												
Dahlia												
Delphinium												
Dianella												
Dianthus												
Eyebright												
Freesia												
Fritillary												
Gardenia												
Genista												
Gentian												
Geranium												
Gloxinia												
Harebell												
Heartsease												

Great Britain—*continued.*

Name.	Displacement.	Length (Extreme).	Beam (Extreme).	Draught	Horse-Power.	Where built.	Maker of Machinery.	Date of Launch.	Date of Completion.	Armament.	Speed (knots).	Complement.
CORVETTES.		ft. ins.	ft. ins.	ft. ins.								
Flower Class:												
Heather												
Hemlock												
Hibiscus												
Honeysuckle												
Hydrangea												
Ivy												
Jasmine												
Jonquil												
Kingcup												
Lavender												
Lily												
Ling												
Loosestrife												
Lotus												
Mallow												
Marguerite												
Marjoram												
Meadowsweet												
Mignonette												
Monkshood												
Myosotis												
Narcissus												
Nasturtium												
Nigella		..	..	..	..	Philip						
Orchis												
Oxlip												
Pennywort	925	..	..	..	..	..	..	..	..	1 4-*in.* 1 m.pp.	..	78–85
Pentstemon												
Petunia												
Phlox												
Pimpernell						Henry Robb						
Pink		..	..	..	..							
Poppy												
Primrose												
Primula												
Rhododendron												
Rock Rose												
Rose												
Saxifrage												
Snowdrop												
Snowflake												
Spiraea												
Starwort												
Stonecrop												
Sunflower												
Sweetbriar												
Thyme												
Tulip												
Verbena												
Vervain		..	..	..	..	Harland & Wolff	Harland & Wolff	Mar. 1941				
Vetch												
Violet												
Wallflower												
Woodruff												
FRIGATES (*ex-River Class Corvettes*)												
Spey												
Tay												
Test												
Lagan	..	..	..	..	..	Smith's Dock	Smith's Dock	..	..	..	..	125–140
Wear												
Jed												
Rother												
Ness, etc.												
Captains Class:												
Bentinck												
Berry												
Bazely												
Byard												
Drury												
SLOOPS.												
Leith						Devonport		1933	1934			
Lowestoft						Devonport		1933	1934	2 4·7-*in.* guns, 1 4-*in.* 12 smaller	16½	100
Wellington	990	266	36 0	7 6	2,000	Devonport	J. S. White	1935	1935			
Londonderry						**Devonport**		**1934**	**1935**			
Deptford						**Chatham**						

Great Britain—*continued.*

Name.	Displacement.	Length (Extreme).	Beam (Extreme).	Draught.	Horse-Power.	Where built.	Maker of Machinery.	Date of Launch.	Date of Complement.	Armament.	Speed (knots).	Complement.
		ft. ins.	ft. ins.	ft. ins.								
SLOOPS (*cont.*)												
Aberdeen	990	..	..	..	..	**Devonport**	**Thornycroft**	**1935**		**3 4-*in.* 12 smaller**	**16½**	**100**
Fleetwood						**Devonport**	**Thornycroft**	**1935**		**4 4-*in.* 12 smaller**		
CUTTERS (*ex-U.S.N.*):												
Banff (*ex*-(Saranac)	1900	250	42 0	16 0	3,000	..	..	..	1929–1932	..	16	..
Fishward (*ex*-Tahoe)												
Gorleston *ex*-(Itasca)												
Landguard-(*ex*-Shoshone)												
Lulworth (*ex*-Chelan)												
Sennen (*ex*-Champplain)												
Totland (*ex*-Cayuga)												
MINE-SWEEPERS. 60 in No.												
Algerine Class:												
Acute												
Alarm												
Albacore												
Algerine												
Ardrossan												
Cadmus												
Circe												
Cockatrice												
Espiegle												
Fantome												
Fly												
Mutine												
Onyx												
Rattler												
Ready												
Rinardo												
Rosario												
Spanker												
Vestal												
Bangor Class:												
Bangor						Harland & Wolff						
Blackpool												
Bridlington						Denny						
Bridport												
Blyth						Blyth						
Beaumaris						Ailsa						
Boston												
Dunbar						Blyth						
Ilfracombe						Hamilton						
Llandudno												
Peterhead						Blyth						
Polruan						Ailsa						
Rye												
Rhyl						Lobnitz						
Romney												
Rothesay						Hamilton						
Sidmouth						Robb						
Stornoway												
Tenby						Hamilton						
60 in No.	..	..	..	..	..	Building in Canada	..	1941–2				

Great Britain—*continued.*

MINESWEEPERS AND SLOOPS

Name.	Displacement.	Length (Extreme).	Beam (Extreme).	Draught.	Horse-Power.	Where Built.	Maker of Machinery.	Date of Launch.	Date of Completion.	Armament.	Speed (knots).	Complement
		ft. ins.	ft. ins.	ft. ins.								
Halcyon Class:												
Halcyon .	815	246	33 6	7 3	1,770	J. Brown	J. Brown	1934	1934	2 *4-in.* 5 smaller	17	80
Harrier .						Thornycroft	Thornycroft	1934	1934			
Hussar .						Thornycroft	Thornycroft	1934	1934			
Speedwell						Hamilton	Beardmore	1935	1935			
Salamander	815	246	33 6	7 7	2,000	J. S. White	J. S. White	1935	1935	2 *4-in.* 9 smaller	17	
Sharpshooter	..	..	..	..	..	Devonport	..	1936	1937	2 *4-in.* 5 smaller	..	
Hazard .	..	..	..	..	..	Wm. Gray	..	1936	1937			
Gleaner .	..	..	..	..	..	Wm. Gray	..	1937	1938			
Seagull	815	230 b.p	33 6	7 0	1,750	Devonport	Richardsons, Westgarth	1937	1938	2 *4-in.* H.A. 5 smaller	17	
Franklin	830					Ailsa	Thornycroft	1937	1938	..	17	
Jason .						Ailsa	Thornycroft	1937	1938			
Scott .	..					Caledon	Parsons					
Britomart .	875					Devonport	Barclay Curle	1938	1939	2 *4-in.*, H.A. 5 smaller	17	..
Speedy .						J. Hamilton	J. S. White					
SLOOPS *Shoreham Class:* *Repeat Shoreham Class:*												
Falmouth.	1060	281 4	35 0	8 3	2,000 P.T. (G.)	Devonport	Hawthorn Leslie	1932	1932	2 *4-in.*, A.A. 4 *3-pr.* 8 L.	16½	100
Milford .							Yarrow					
Weston .							Yarrow		1933			
Bideford .	1105	281 4	35 0	8 0	2,000 P.T. (G.)	Devonport	J. S. White & Devonport	1931	1931	1 *4-in.*, 1 *4-in.* A.A. 4 *3-pr.* 8 L. Fowey 2 *4-in.* H.A. 13 smaller guns	16½	100
Rochester.						Chatham	J. S. White & Chatham	1932	1932			
Fowey .						Devonport	J. S. White & Devonport	1930	1931			
Shoreham.						Chatham	J. S. White & Chatham	1930	1931			
Hastings Class:												
Hastings .	1025	266 4	34 1	9 1	2,000 P.T. (G.)	Devonport	Devonport	1930	1931	1 *4-in.*, 1 *4-in.* A.A. 2 *3-pr.* 8 L. Hastings 2 *4-in.*, 9 smaller	16½	..
Folkestone	1045					Swan, Hunter	Hawthorn, Leslie	1930	1930			
Scarborough						Swan, Hunter	Hawthorn, Leslie	1930	1930			
Bridgewater Class:												
Bridgewater	1045	266 4	34 0	8 6	2,000 P.T. (G.)	Hawthorn Leslie	Hawthorn Leslie	1928	1929	2 *4-in.* A.A. Bridgewater 10 smaller, Sandwich 11 smaller	16½	95
Sandwich												
Arabis Class:												
Lupin	1175	267 9	33 6	12 0	2,000 recip.	Richardson Duck	Blair	1915	1916	1 *4-in.*, 2 *2-pr.* 2 M., 8 L.	16–17	100
Rosemary												
Acacia Class:												
Foxglove .	1165	262 6	33 0	12 6	1,800 recip.	Dunlop Bremner	Dunlop Bremner	1915	1915	2 *4-in.*, 4 *3-pr.* 2 *2-pr.*, 8 L.	16–17	100

Great Britain—*continued.*

MINESWEEPERS, RIVER GUNBOATS.

Name.	Displacement.	Length (Extreme).	Beam (Extreme).	Draught.	Horse-Power.	Where built.	Maker of Machinery.	Date of Launch.	Date of Completion.	Armament.	Speed (knots).	Complement.
		ft. ins.	ft. ins.	ft. ins.								
MINE-SWEEPERS												
Aberdare	710	231 0	28 7	9 0	2,200 recip.	Ailsa	Ailsa	1918	1918	1 *4-in.*, 1 *12-pr.* A.A. Alresford, Caterham, Ross and Saltburn no armament.	16	73
Albury						Ailsa	Ailsa	1918	1919			
Alresford						Ailsa	W. H. Allen	1919	1919			
Bagshot						Ardrossan Dry Dock Co.	W. H. Allen	1918	1919			
Derby						Clyde S.B. Co.	Clyde S. B. Co.	1918	1918			
Fermoy						Dundee	Cooper & Greig	1919	1919			
Fareham						Dunlop, Bremner	Dunlop, Bremner	1918	1918			
Elgin						Simons	Simons	1918	1918			
Sutton						McMillan	Yarrow	1918	1919			
Saltash						Murdock & Murray	Do.					
Saltburn						Do.	Do.					
Selkirk						Do.	D. Rowan	1918	1919			
Ross						Lobnitz	Lobnitz	1919	1919			
Widnes						Napier	Rowan	1918	1918			
Harrow						Eltringham	Wallsend Slipway	1918	1918			
Lydd						Fairfield	Fairfield	1918	1919			
Stoke						Rennoldson	Shields	1918	1918			
Pangbourne						Lobnitz	Lobnitz	1917	1917			
Tedworth	675	231 0	28 0	9 0	1,800 recip.	Simons	Simons			1 *3-in.* A.A.	16	35
Kellett	800	231 0	28 7	7 6	2,200 recip.	Simons	Simons	1919	1919	1 *3-pr.*	16	86
RIVER GUN-BOATS.												
Locust	585					Yarrow	Yarrow	Bldg.				
Aphis	625	237 6	36 0	4 6	2,000 recip.	Ailsa	Ailsa	1915	1915	2 *6-in.*, 1 *3-in.* A.A., 1 *2-pr.*, 8 L.	14	55
Cockchafer						Barclay Curle	Barclay Curle	1915	1916	2 *6-in.*, 1 *3-in.* A.A., 8 L.		
Gnat						Lobnitz	Lobnitz	1915	1915	2 *6-in.*, 1 *3-in.* A.A., 1 *2-pr.*, 8 L.		
Scarab						Wood, Skinner	N.E. Marine	1915	1915	2 *6-in.*, 1 *3-in.* A.A., 1 *2-pr.*, 8 L.		
Tarantula						Wood Skinner	N.E. Marine	1915	1916	1 *6-in.*, 1 *3-in.* A.A., 1 *2-pr.* 8 L.		

Argentine Republic.

Name or Number.	Where Built.	Launched.	Dimensions. Length. (Extreme.)	Beam.	Draught.	Number of Screws.	Displacement.	Horse-Power.	Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel. Oil
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
Flotilla Leaders—													
Cervantes (*ex*-Spanish Churruca)	Cartagena ..	1925	318	31⅝	10½	2	1522	42,000	36	5 4·7 in., 1 3-in. A.A., 4 M	2 triple 21-in.	160	540
Juan de Garay (*ex*-Spanish Alcala Galiano)													
Mendoza ..	J. S. White, Cowes	1928	335	31·8	12¼	2	1466	45,000	36 (La Rioja 39·4 *t.*)	5 4·7 in., 1 3-in. A.A., 2 2-pr., 4 M.	2 triple 21-in.	160	700
La Rioja ..		1929											
Tucuman ..		1929											
Destroyers—													
Catamarca	Schichau ..	1911	288·7	27½	10	2	972	28,000	32	3 4-in. 2 1-pr.	4 21-in.	100	220
Jujuy	Germania ..												
Cordoba	Shichau ..	1910	295¼	29·5	10	2	1000	28,000	34·7 *t.*			100	200
La Plata	Germania ..	1911											
San Juan ..	J. Brown ..	1937	323	33	8½	2	1350	34,000	35½	4 4·7 in., 8 smaller	2Q 21-in.	150	450
San Luis ..													
Misiones ..	Cammell Laird	1937	323	33	8½	2	1350	34,000	35½	4 4·7 in., 8 smaller	2Q 21-in.	170	450
Santa Cruz ..													
Buenos Aires	Vickers, Barrow	1937	323	33	8½	2	1350	34,000	35½	4 4·7 in., 8 smaller	2Q 21-in.	160	450
Entre Rios ..													
Submarines—													
Santa Fe	Taranto ..	1931	226¼	21¼	13	2	850 1080	3,000 1,300	17·5 9	1 4·7-in. 1 2-pr. A.A.	8 21-in.	41	—
Salta		1932											
Santiago del Estero		1933											

Torpedo tubes : Q = quadruple.

Brazil.

Name or Number.	Where Built.	Launched.	Dimensions. Length. (Extreme.)	Beam.	Draught.	Number of Screws.	Displacement.	Horse-Power.	Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel. Coal / Oil
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
Destroyers—													
Amazonas	Rio de Janeiro	Bldg.	360½ w.l.	34⅝	9 10	2	1500	42,000	36 5	5 5-in. 4 M. A.A.	3 21-in. (Q)	190	— 500
Araguaia													
Acre													
Ajuricaba													
Apa													
Araguari													
Greenhalgh													
Marcilio Dias.. ..													
Maria E. Barros ..		1940											
Piaui	Yarrow ..	1908	240	23·6	7·5	2	560	8,000	27 (27·1- 28.7 on trials)	2 4-in., 4 3 prs.	2 18-in.	75	140 —
Matto Grosso		1908											
†Paraiba		1909											
Rio Grande do Norte		1909											
Santa Catarina ..		1909											
Sergipe		1909											
Maranhao (*ex*- Porpoise)	Thornycroft..	1913	265·3	26·5	10	2	934	22,500	31	3 4-in., 1 2-pr.	2 21-in. (D.)	100	— 250
Submarines—													
Humaita	Spezia (Ansaldo Fiat)	1927	282	25·6	14	2	1450 1884	4,800 2,200	18·5 10	1 4·7-in. A.A.; 4 M., 20 mines	6 21-in.	55	— 140
Tamoia	Spezia (Orlando)	1937	197½	21	14½	2	620 855	1350 800	14 8	1 3·9-in. 2 M. A.A.	6 21-in.	33	..
Tymbira ..													
Tupi													

† Training Ship.

Chile.

Name or Number.	Where Built.	Launched.	Dimensions. Length. (Extreme.)	Beam.	Draught.	Number of Screws.	Displacement.	Horse-Power.	Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel. Coal/Oil
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
DESTROYERS—													
Serrano .. Orella .. Riquelme .. Hyatt .. Videla .. Aldea ..	Thornycroft's	1928	300	29	9	2	1090	28,000	35	3 4·7-in., 1 3-in.	2 triple 21-in.	130	—/346
Almirante Lynch, Almirante Condell	White.. ..	1912 1913	320 p.p.	32·6	11·1	3	1850	30,000	31	6 4-in. 4 M.	4 18-in.	190	427/80
SUBMARINES—													
Capitan Thompson Almirante Simpson Capitan O'Brien ..	Vickers Armstrong's	1929 1929 1929	275	27·5	14·8	2	1520/1990	2750/1300	15/9	1 4-in.	8 21-in.	54	—/200
H 1. Gualcolda .. H 2. Tegualda .. H 3. Rucumilla .. H 4. Guale .. H 5. Quidora .. H 6. Fresia ..	Fore River, U.S.A.	1915	150·3	15·75	12·3	2	355/470	480/640	13/11	..	4 18-in.	22	—/17·5

3 submarines are projected.

Denmark.*

Name or Number.	Where built.	Launched.	Dimensions. Length (Extreme).	Beam.	Draught.	Number of Screws.	Displacement.	Horse-Power.	Speed.	Armament.	Torpedo Tubes	Complement.	Fuel. Coal/Oil
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
TORPEDO BOATS. FIRST CLASS—													
T4. Glenten .. T5. Hogen .. T6. Ornen ..	Royal Dockyard, Copenhagen	1934	198·9	19·5	7·8	2	285	6,000	27½	2 3·4-in., 2 ·78 M., 2 M.	6 17·7 in.	51	—/40
T3. Laxen .. T1. Dragen .. T2. Hvalen ..		1930 1929 1930	198·9	19·5	7·4	2	281	6,000	27½	2 3-in., 2 ·78 M., 2 M.	8 17·7 in.	51	—/26
R4. Havkatten ‡ R5. Sælen ‡ .. R3. Nordkaperen ‡ S6. Narhvalen† .. S5. Havhesten† .. S4. Söhunden † .. S2. Stören † .. S1. Springeren † ..		1919 1919 1918 1917 1917 1917 1916	126·3	13·9	9	2	110	2,000	24·6 t.	2 6-pr. A.A.	2 (1 in R2-4)	24	15/—
P1. Hvalrossen ‡		1913	148·2	16·9	7·5	2	158	3,480	26·2 t.	1 3-in., 1 M.	4 18 in.	34	29/—
S3. Söridderen †	Yarrow & Co.	1911	126·3	15	9	2	110	2,000	24·3	2 6-pr. A.A.	1 18 in.	24	15/—
Two in number ..	Copenhagen	Bldg.	279	27·4	8	2	700	21,000	35	2 4-in. 4 1·5-in.	6 21 in.	..	..
SUBMARINES—													
Daphne. D1 .. Dryaden. D2 ..	Royal Dockyard, Copenhagen	1926	161	16	8·2		305/380	900/400	13·4/7	1 3-in. A.A., 1 ·78 M.	6 18 in.	25	—/16
Flora. C3 .. Bellona. C2 ..	,,	1919	155·7	15·7	9	2	301/369	900/640	14·5/10·5	1 6-pr.	5 18 in.	24	—/13
Rota. C1 § .. Galathea. B12 .. Triton. B10 .. Ran. B9	,, ,, ,, ,,	.. .. 1914 1915	133·3	13·4	8	2	181/231	450/340	13·5/9·8	1 6-pr.	3 18 in.	14	—/9
Havkalen. E3 .. Havfruen. E2 .. Havmanden. E1 Havhornen ..	,, ,, ,, ,,	1937 1937 1936 Bldg.	155·6	15·3	9·4	2	320/420	600/220	15/8	2 1·5-in.	5 18 in.	20	..

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* Under the control of Germany. † Used as minesweepers. ‡ Used as patrol vessels.

§ Rota has one deck tube in addition.

France.

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Horse-Power.	Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel.
			Length. (Extreme.)	Beam.	Draught.								Oil
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
FLOTILLA LEADERS—													
Volta	Ch. de Bretagne, Nantes	1936	451	41·1	15	2	2,884	92,000	38	8 5·4-in., 2 1·5-in. A.A.	10 21·7-in.	240	630
Mogador	Lorient	1937											
Le Fantasque	Lorient	1934	434½	39½	14	2	2,569	74,000 Terrible did 45 knots on trial.	37	5 5·4-in., 4 1·5-in. A.A.	3 21·7-in (T)	220	650
L'Audacieux													
Le Malin	Ch. de la Mediterranée	1934											
L'Indomptable													
Le Triomphant *	Ch. de France												
Le Terrible	Ch. Naval Français												
Vauquelin	Dunkerque	1932	424¼	39	14	2	2,441	64,000	36	5 5·4-in., 4 1·5-in. A.A.	7 21·7-in.	220	650
Kersaint	Nantes	1931											
Cassard	Nantes	1932											
Tartu	Nantes	1931											
Aigle	Dunkerque	1930	423	40	14	2	2,441	64,000	36	5 5·4-in., 4 1·5-in. A.A.	6 21·7-in.	220	650
Vautour	Havre												
Albatros	St. Nazaire												
Gerfaut	Nantes												
Milan	Lorient	1930	423	40	14	2	2,441	68,000	37	5 5·4-in., 4 1·5-in. A.A.	7 21·7-in.	220	650
Epervier													
Valmy	Penhoet	1928	427	39	15	2	2,436	64,000	36	5 5·4-in., 4 1·5-in. A.A.	2 21·7-in. (T)	207	650
Verdun	St. Nazaire	1928											
Vauban	Dunkerque	1930											
Lion	Dunkerque	1929											
Guépard	Lorient	1928											
Leopard	St. Nazaire	1924	416	37½	17½	2	2,126	55,000	35·5	5 5·1-in.	2 21·7-in. (T)	206	530
Lynx	St. Nazaire	1925											
Tigre	Nantes	1924											
Panthere	Lorient	1926											
DESTROYERS—													
L'Aventurier	Bordeaux	Bldg.	363½	36½	10½	2	1,772	58,000	37	6 5·1-in., 2 1·5-in.	7 21·7-in.	175	480
L'Opiniatre													
L'Intrepide	La Seyne												
Le Temeraire													
Le Hardi	Loire	1938											
Mameluck													
Adroit ex-Epée	Gironde												
Lansquenet													
Casque	La Seyne												
Foudroyant ex-Fleuret		1940											
Siroco ex-Corsaire		1940											
Bison ex-Le Flibustier													
Forbin	Havre	1928	351·7	32·2	10·2	2	1,378	31,000	33	4 5·1-in., 2 1·5-in. A.A.	2 21·7-in. (T)	146	300
Frondeur	Caen	1929											
Fougueux	Nantes	1928											
Basque	Maritime	1929											
Bordelais	Bordeaux	1928											
Boulonnais	Caen	1927											
Brestois	Nantes	1927											
L'Alcyon	Bordeaux	1926											
Le Fortune	Caen												
Le Mars	Caen												
La Palme	Nantes												
Mistral *	Havre	1925	347	33·0	13·9	2	1,319	33,000	33	4 5·1-in., 2 1·5-in. A.A.	2 21·7-in. (T)	138	300
Ouragan *	Caen	1924											
Simoun	St. Nazaire	1924											
Tempête	Nantes	1925											
Tramontane	Bordeaux	1924											
Trombe	Harfleur												
Typhon	Bordeaux	1925											
Tornade	Bordeaux	1925											
L'Agile	Nantes	Bldg.	295½	30⅓	8½	2	994	28,000	34	4 3·9-in.	4		
Le Fier													
L'Entreprenant													
Le Farouche													
L'Alsacien													
Le Corse													
Le Breton													

* Operated by the Allies.

France—*continued.*

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Horse-Power.	Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel. Oil
			Length. (Extreme.)	Beam.	Draught.								
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
TORPEDO BOATS—													
La Melpomène *	Nantes ..	1935	264·9	26·0	9·2	2	610	22,000	34·5	2 3·9-in., 4 M. A.A.	1 21·7-in. (D)	131	90
La Pomone													
La Flore *													
L'Iphigénie ..													
Bombarde	Nantes ..	1936											
Bouclier	Le Trait ..	1937											
La Bayonnaise	Bordeaux ..	1936											
La Poursuivante ..	Dunkerque	1936											
La Cordeliere *	Normand ..	1936											
L'Incomprise *	Le Trait ..	1937											
Baliste	Dunkerque	1937											

Name or Number.	Where Built.	Launched.	Length.	Beam.	Draught.	Number of Screws.	Displacement.	Horse-Power.	Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel. Oil
							Surf./Sub.	Surf./Sub.	Surf./Sub.				
1ST CLASS SUBMARINES													
La Martinique	Cherbourg ..	Bdg.	325½	27½	14	2	1605/2100	12,000/—	21/—	1 3·9-in.	..	..	..
Sidi-Ferruch	Brest ..	1937	302·8	27	16	2	1379/2060	8000/2000	18/10	1 3·9-in., 1 1·5-in. A.A.	11	63	..
Casabianca *	Ch. de la Loire.. ..	1935											
Le Glorieux	Cherbourg ..	1932											
Le Centaure	Cherbourg ..	1933											
Le Conquerant	Brest ..	1932											
Le Tonnant	Loire ..	1934											
L'Espoire	Cherbourg ..	1931											
Protée	La Seyne ..	1930	301·8	27	16	2	1379/2060	6000/2000	17/10	1 3·9-in., 1 1·5-in. A.A.	11	61	96
Pégase	St. Nazaire												
Acheron	St. Nazaire	1929											
Argo	Nantes ..	1930											
Acteon													
Pascal	Brest	1928-1929	302·5	27	16	2	1379/2060	6000/2000	17/10	1 3·9-in., 1 1·5-in. A.A.	11	61	96
Pasteur													
Henri Poincare	Lorient ..												
Archimede	Caen												
Fresnel..	St. Nazaire												
Redoubtable ..	Cherbourg ..	1928	302·5	27	16	2	1384/2080	6000/2000	17/10	1 3·9-in. A.A. 1 1-pr. A.A.	11	63	96
Vengeur													
Requin..	Cherbourg ..	1924	257¼	23	17½	2	974/1415	2900/1800	16/10	1 3·9-in. A.A.	10 21·7	54	..
Morse		1925											
Caiman		1927											
Dauphin	Toulon ..	192											
Espadon		192											
Marsouin *	Brest	1924											
Phoque..		192											

* Operated by the Allies.

France—*continued.*

Number and Name	Where Built.	Launched.	Dimensions.			Number of Screws.	Displacement. Surf./Sub.	Horse-Power.	Speed. Surf./Sub.	Armament.	Torpedo Tubes.	Complement.	Fuel.
			Length. (Extreme.)	Beam.	Draught.								Oil
2ND CLASS SUBMARINES			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
L'Aurore	Toulon ..	1940	238·3	20·3	12·3	2	893/1170	3000/1400	14·5/9	1 3·9-in. 2·5 M.	9 21·7	44	..
La Creole	Havre ..	1940											
La Favorite ..	Le Trait	Bldg.											
L'Africaine ..													
L'Andromaque	Havre ..	Bldg.											
L'Armide	Worms												
L'Andromede ..													
L'Astree													
La Clorinde ..	Nantes												
L'Antigone ..													
Ceres	Le Trait ..	1938	223.5	18·3	11·3	2	600/800	1800/1120	14/9	1 3-in. 2 M.	9 21·7	48	..
Pallas													
Minerve*	Cherbourg ..	1934	224	17¼	13	2	597/800	1300/1230	14/9	1 3-in., 2 M.	9 21·7	43	..
Junon *	Havre ..	1935											
Vénus	Worms ..	1935											
Iris	Dubigeon ..	1934											
Orphée	Ch. Normand, Havre	1932	210	20	13	2	558–570/787	1300/1000	14/9	1 3-in., A.A.	6 21·7 2 15·7	43	..
Oréade		1932											
Orion*		1931											
Ondine*		1931											
La Psyché	Ch. Normand	1932											
La Sybille	Worms ..												
La Vestale	Schneider												
La Sultane													
Amphitrite	Le Trait ..	1932	216¼	20	13	2	565–571/787	1300/1000	14/9·2	1 3-in. A.A.	6 21·7 2 15·7	43	..
Antiope	Havre	1932											
Atalante	Schneider ..	1930											
Amazone	Le Trait ..	1932											
Diane	Havre	1930											
Méduse		1930											
Argonaute	Schneider ..	1929											
Aréthuse		1929											
Ariane	Havre	1925	216·5	20	13	2	576/766	1200/1000	14/9	1 3-in. A.A.	7 21·7	40	..
Danaé		1927											
Eurydice		1927											
Circé	Schneider ..	1925	204·5	21	12·8	2	552/765	1250/1000	14/9	1 3-in. A.A.	7 21·7	40	..
Calypso		1926											
Thétis		1927											
Naïde	St. Nazaire	1925	210	21	14¾	2	548/744	1300/1000	14/9·5	1 3-in. A.A.	7	39	..
Sirène		1925											
Galatée..		1925											
MINELAYING SUB-MARINES—													
Perle	Toulon	1933	216·5	23·3	13·5	2	669/910	1300/800-1000	12/9	1 3-in., 1M., 32 mines	5 21·7	40	..
Le Diamant ..		1933											
Rubis*		1930											
Nautilus		1928											
Saphir . ..		1929											
Turquoise		1929											
Emeraude	Toulon ..	Bldg.						1300/—	12/—	1 3·9-in.	4		

French submarines are divided into two classes. 1st class: All vessels of 900 tons and above in the surface condition; 2nd class: All smaller vessels, including the minelayers.

*** Operated by the Free French.**

Germany.

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Horse-Power.	Designed Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel.
			Length. (Extreme.)	Beam.	Draught.								Oil
DESTROYERS—			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
(Z 4) Richard Beitzen	Deutsche-Werke, Kiel	1935	374	37	9¼	2	1625	40,000	36	5 5-in. 4 1·5-in.	2 21 in. (Q)	252	500
(Z 5) Paul Jacobi ..	Germania-Werft, Kiel												
(Z 6) Theodor Riedel													
(Z 7) Hermann Schoemann													
(Z 10) Hans Lody ..	Deschimag, Bremen												
(Z 14) Friedrich Ihn	Blohm & Voss Hamburg												
(Z 15) Erich Steinbrinck													
(Z 16) Friedrich Eckoldt													
Z 20 Karl Galster	Deschimag, Bremen	1938	385½	38½	9½	2	1811	55,000	36	5 5-in. 4 1·5-in.	2 21 in. (Q)	280	..
Z 23–40 Narvik Flotilla	Bremen	1939 42–	385½	38½	9½	2	2400	55,000	36	5 5·9-in.			
Elbing Class	..	..	..	..	..	..	1100	..	35	4 4·1-in.	2 21 in. (T.)	..	..
*Iltis	Wilhelms-haven	1927	304	28¼	8¾	2	800	25,000	34	3 4·1-in. 2 1-pr. A.A.	2 19·7 in. (T.)	125	300
*Tiger		1928											
*Jaguar		1928											
*Leopard		1928											
*Seeadler		1926											
*Greif		1926	287¾	27¼	9¼	2	800	24,000	33	3 4·1-in. 2 1-pr. A.A.	2 19·7 in. (T.)	120	300
*Kondor		1926											
*Falke		1926											
*Möwe		1926											
TORPEDO BOATS—													
T. 1–30	Bremen	1938–1940	267	28¼	6¼	2	600	25,000	36	1 4·1-in. 1 1·5-in.	2 21 in. (T)	110	..
SUBMARINES—†													
U 2–6	Deutsche Werke, Kiel	1935 | 1936	136½	13	12½	2	250 —	700 —	13 7	1 1-pr.	3 21 in.	23	..
U 7–11, 17, 20–24 ..	Germania Werft, Kiel												
U 28–30	Deschimag, Bremen	1936	206⅔	19	13	..	500 —	..	16·5 8	1 3·5-in. 1 1-pr.	5 21 in.	35	..
U 34	Germania Werft, Kiel												
U 37, 38, 43	Deschimag, Bremen	1939	246	20·6	13·5	..	740 —	3200 —	18·5 9	1 4-in. 1 1-pr.	6 21 in.	40	..
U 45–55	Krupp Germania		213	19·7	13·1	2	517 —	2100 —	16·5 8	1 3·5-in. 1 1-pr.	5 21 in.	35	..
U 56–63	Deutsche Werke, Kiel		136·5	13	12·5	2	250 —	700 —	13 7	1 1-pr.	3 21 in.	23	..
U 65–68	Deschimag, Bremen		246	20·6	13·5	2	740 —	3200 —	18·5 9	1 4-in. 1 1-pr.	6 21 in.	40	..
U 69–76	Krupp Germania		213	19·7	13·1	2	517 —	2100 —	16·5 8	1 3·5-in. 1 1-pr.	5 21 in.	35	..
‡U 570													

* Classified as torpedo boats in German official lists.

† The strength of the German Submarine Fleet is not known.

‡ Captured by British Hudson Aircraft.

Greece.§

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Horse-Power.	Maximum Trial Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel.
			Length. (Extreme.)	Beam.	Draught.								Coal / Oil
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
DESTROYERS—													
Pindos .. .. Kanaris	..	..	..	..	..	..	..	..	..	..	..	..	..
†Adrias (Hunt Cl.)	Swan Hunter	1941	..	..	..	..	1050	..	..	4 4-in.	..	..	..
Paul Coundouriotis	Odero, Genoa	1931	308·8	30·3	10·5	2	1230	30,000	40	4 4·7 in., 4 2-pr. A.A. 40 mines	6 21-in. (T.)	156	— / 630
Spetsai		1931	314·8	30·3	11·3	2	1308	30,000	40				
Thyella	Yarrow ..	1906	220	20·6	9·0	2	305	6,000	36	2 3-in. 1 2-pr.	2 18-in.	70	80 / —
Sphendoni		1906	220	20·6	9·0	2	305	6000	30				
†Basilissa Olga ..	Yarrow ..	1938	320	33	8·5	2	1350	34,600	32	4 1·5-in.	8 21-in.	150	— / 455
Niki .. .. Aspis	Stettin (Vulcan)	1906	220	20·6	9·0	2	275	6000	30	2 3-in., 4 6-pr.	2 21-in.	70	90 / —
*Aetos, *Panther, *Ierax ..	Birkenhead	1911	293	27·7	9·6	2	1013	19,750	32	4 4-in., 2 2-pr. (Panther and Aetos, 40 mines)	6 21-in. (T.)	102	— / 260
Crete (*ex*-H.M.S. Hursley)													
Miaoulis													
Themistocles													
Salamis													
Admiral Hastings ..													
Aegæan													
TORPEDO BOATS—													
Aigli	Stettin (Vulcan)	1913	147·8	9	4	2	142	2400	25	2 6-pr.	2 18-in.	..	25.
‡Pergamos	Fiume	1914	178·4	18·8	5	2	237	5000	28½	1 11-pr.	3 18-in.	25	21 / 31
‡Proussa	Fiume	1914	178·4	18·8	5	2	237	5000	28½	1 11-pr.			
CORVETTES—													
Apostolis (*ex*-British Flower Class)													
Criezis													
Tombazis													
Saktouris													
							Surf. / Sub.		Surf. / Sub.				
SUBMARINES—													
†Papanicolis	Ch. de la Loire, Nantes	1926	203¾	17·7	12·3	2	567 / 760	1300 / 1000	14 / 9·5	1 4-in., 1 2-pr. A.A.	6 21-in.	30	..
Nereus	Ch. de la Loire, Nantes	1927	226½	18¾	12·6	2	689 / 945	1500 / 1200	14 / 9·5	1 4-in., 1 2-pr. A.A.	8 21-in.	42	..
Pipinos													
Matrozos													

* Reconstructed by Messrs. J. S. White & Co., Cowes, 1924–25. ‡ Surrendered Austrian torpedo-boats.
§ Under the control of Germany. Some of the above vessels are under British control, including †.

Italy.*

Name or Number.	Where built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Horse-Power.	Maximum Trial Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel.
			Length. (Extreme.)	Beam.	Draught.								Oil
			Feet.	Feet.	Feet.		Tons.		Knots				Tons.
DESTROYERS—													
U. Vivaldi	Genoa (Odero)	1929	353	33·6	10·5	2	1628	50,000	38	6 4·7-in. (in pairs) 4 1·5-in. A.A. Carry mines	2 21-in. (D.)	185	600
A. Usodimare ..		1929											
L. Malocello	Genoa (Ansaldo)	1929											
A. da Noli	(Cant. Navali)	1929											
E. Pessagno	Ancona (Cant. Navali)	1929											
N. da Recco †.. ..		1929											
N. Zeno	Fiume ..	1928											
G. da Verazzano ..		1928											
A. Pigafetta		1929											
Augusto Riboty ..	Ansaldo ..	1916	340	32	9·8	2	1382	35,000	35	8 4-in., 4 2-pr. A.A., 100 mines.	2 18-in. (D.)	150	344
Carlo Mirabello ..		1915											
Artiglieri † ..	Odero-Terni Orlando	1938	350	33·4	10·9	2	1620	48,000	39	4 4·7-in. 4 1·5-in. A.A.	6 21-in.	170	500
Ascari													
Corazziere													
Geniere													
Aviere													

* Many of these ships are under British control, including †.

Italy—*continued.*

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Standard Displacement.	Horse-Power.	Maximum Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel.
			Length. (Extreme.)	Beam.	Draught.								Oil
DESTROYERS—*Contd.*			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
Carabiniere .. Lanciere..	Cartieri Dell' Tirreno Riva Trigoso	1938	350	33·4	10·9	2	1620	48,000	39	4 4·7-in. 4 1·5-in. A.A.	6 21-in. (T.)	170	500
Granatiere .. Bersagliere ..	Cartieri Navali Rivniti Palerino	1938											
Fusiliere † .. Alpino ..	Cantieri Navali di Ancona	1938											
*Lira .. *Lupo .. *Lince .. *Libra ..	Cantiere Naval del Quarnaro Fiume	1937 1937 1937	267	26	7·9	2	679	19,000	34	3 3·9-in. 6 1·5-in.	4 18-in.	94	..
*Clio .. *Calliope .. *Circe ..	Ansaldo, Genoa	1938											
*Alcione .. *Aretusa ..	Ansaldo, Genoa	1938											
*Polluce .. *Partenope .. *Pleiadi .. *Pallade ..	Naples	1937											
A. Oriani † .. V. Gioberi ..	Orlando.	1936	350	33½	10	2	1570	48,000	39	4 4·7-in. 4 1·5-in A.A. carry mines	6 21-in. (Γ.)	157	..
Antares .. *Cassiopea .. *Castore .. *Cigno .. *Sagittario ..	Ansaldo Ancona Fiume	1936	267	27	7·6	2	652	19,000	34	3 3·9-in 6 1·5-in. A.A.	4 18-in.	..	..
*Cantauro.. *Climene ..	Ancona	1935	269	27	7·2	2	652	19,000	34	3 3·9-in. 6 1·5-in A.A. guns	4 18-in.	..	..
Sirio .. Perseo ..	Fiume	1935											
Grecale †.. Maestrale ..	Ancona Ancona	1934 1934	350	33½	10	2	1449	44,000	38	4 4·7-in., 4 1·5-in. A.A.	6 21-in.	156	600
Dardo .. Strale ..	Odero, Sestri Pozente	1930	315	32	9·5	2	1206	44,000	38	4 4·7-in. 4 M. A.A. 2 1·5-in. A.A.	6 21-in. (T.)	156	225
Freccia .. Saetta ..	Cant. Navale di Tirreno, Sestri Levante	1931 1932											
Folgore .. Lampo ..	Cantieri Partenopei, Naples	1931											
Turbine .. Euro ..	Genoa	1927	307½	30	9·5	2	1073 1092	35,000	36	4 4·7-in., 3 M., 52 mines 2 1·5-in. A.A.	6 21-in. (T.)	140	340
Francesco Crispi .. Quintino Sella ..	Naples (Pattison)	1925 1925	278·6	28·2	8·6	2	935	36,000	35	4 4·7-in., 2 2-pr. A.A. 2 M., 40 mines	2 21-in. (D.)	106	200
*Giuseppe Sirtori ..	Genor (Odero)	1916	237¾	24	9·0	2	669	15,000	32–33·8	6 4-in., 2 2-pr. A.A. 2 M.	4 18-in. (D.)	100	150
E. Cosenz .. Giacomo Medici .. G. La Farina .. Nicola Fabrizi .. Angelo Bassini .. Giacinto Carini .. G. La Masa ..	Genoa (Odero)	1918 1917 1918 1917 1917 1917 1917	237¾	24	7·9	2	635	15,500	31–34	4 4-in., 2 3-in., 2 M. 10 mines.	4 18-in. (D.)	100	150

* Designated torpedo boats in Italian official lists.
† Under British control.

Italy—*continued.*

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Standard Displacement.	Horse-Power.	Maximum Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel.
			Length. (Extreme.)	Beam.	Draught.								Oil.
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
DESTROYERS—*contd.*													
Antonio Mosto	Naples (Pattison)	1914	239	24	8·8	2	615	14,500	30	5 4-in., 2 2-pr. A.A. 2 M.	4 18-in (D.)	71	150
Giuseppe Abba	Genoa (Odero)												
Rosalino Pilo													
*Giuseppe Dezza	Genoa (Odero)	1914	236	24	8·8	2	615	13,500	30	5 4-in., 2 2-pr. A.A. 2 M.	4 18-in.	71	150
*Giuseppe Missori		1915											
*Gen. A. Cantore		1921	241½	24	7·9	2	635	18,000	30	3 4-in., 2 3-in. A.A. 2 M.	4 18-in. (D.)	100	150
*Gen. A. Chinotto													
*Gen. A. Papa													
*Gen. A. Cascino													
*Gen. M. Prestinari		1922											
*Gen. C. Montanari													
Audace (*ex*-Japanese Kawakaze)	Yarrow	1917	287	27·5	8·3	2	628	21,500	34·5	7 4-in., 2 M.	4 18-in. (D.)	111	252
Solferino S. Martino, Curtatone Castelfidardo, Calatafimi, Monzambano	Leghorn (Orlando)	1921 1922 1923	269 283½	26·5	8·6	2	860 966	22,000	32	4 4-in., 2 3-in. A.A., 2 M., 24 mines	6 18-in.	105	170
SUBMARINES—													
A. Cagni	Monfalcone	1940	285	25·5	17·2	2	1461/—	4600/—	18/8·9	2 3·9-in., 4 M. A.A.	14 18-in.	..	..
L. Torelli	La Spezia	1940	247	22·5	15·5	2	1036/—	3600/—	18/8·5	1 3·9-in., 4 M. A.A.	8 21-in.	60	..
L. da Vinci	La Spezia	1939											
A. Bagnolini	Taranto	1939	250	23	13·8	2	1030/—	3500/—	18/8·5	1 3·9-in., 4 M. A.A.	8 21-in.	60	..
R. Giuliani		1939											
Barbarigo	Adriatico	1938	239½	23·5	15·5	2	941	3,000	17/8·5	2 3·9-in. 2 M. A.A.	8 21-in.	..	..
Veniero		1938											
Dandolo		1938											
Morosini		1937											
Mocenigo		1938											
Emo		1937											
Brin	Tosi	1938	231·4	22½	13½	2	896	3,000	71/8·5	1 3·9-in. 4 A.A.	8 21-in.	..	..
Guglielmotti													
Cappellini	Spezia	1939	238	23·5	15	2	950	3,000	17/8·5	2 3·9-in., 4 M	8 21-in.	52	..
Alagi	Adriatico	1936	19	21	14·4	2	620/844	1350/800	14/8·5	1 3·9-in. 2 M.	6 21-in.	40	..
Aradam	Adriatico	1936											
Asciangbi	Orlando	1937											
Axum	Adriatico	1936											
Dagabur	Tosi	1936											
Dessie	Tosi	1936											
Uarsheich	Tosi	1937											
Scire	Orlando	1938											
Beilul	Orlando	1938											
Argo	Adriatico	1936	206	22·6	10·5	2	676/901	1350/800	14/8	1 3·9-in. 2 M.G.	6 21-in.	40	—
Velella													
Diaspro	Adriatico	1936	197	21	14·4	2	620/844	1350/800	14/8·5	1 3·9-in. 2 M.	6 21-in.	40	..
Turchese													
Corallo													
Malachite	Orlando	1936	197	21	14·4	2	620/844	1350/800	14/8·5	1 3·9-in. 2 M.	6 21-in.	40	..
Ambra													
Onice													
Atropo †	Tosi	1937	266½	23½	12½	2	1190/1550	2880/1300	17/8	1 3·9-in. 2 M. 30 mines	6 21-in.	60	..
Zoea †													
G. Finzi †	Spezia	1935	275	25·5	13·2	2	1332/1965	4400/1800	17/8·75	2 4·7 in. 4 M, 14 mines	8 21-in.	09	..
E. Tazzoli †													

* Designated torpedo boats in Italian official lists.

† Minelayers.

Italy—*continued.*

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Standard Displacement.	Horse-Power.	Maximum Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel.
			Length. (Extreme.)	Beam.	Draught.								Oil
SUBMARINES—*contd.*			Feet.	Feet.	Feet.		Tons.		Knots.				Tons
Smeraldo Topazio Zaffiro & Ametista Sirena, Nereide, Galatea Ondina	Tosi Fiume Orlando Monfalcone	1933	197	21	12	2	590 787	1,350 800	14 8·4	1 3·9-in. 2 M.	6 21-in.	..	..
Archimede	Taranto	1934	231½	22½	13	2	880 1231	3,000 1,200	17 8·5	1 3·9-in. 2 M.	8 21-in.	..	..
Otaria †	Monfalcone	1934	240	23½	14½	2	860 1167	3,000 1,040	17·0 8·5	2 3·9-in. 2 M.	8 21-in.	..	..
Pietro Micca †	Taranto	1935	296	25½	17·5	2	1371 1883	3,000 1,500	15·5 8·5	2 4·7-in., 4 M. 40 mines	6 21-in.	..	..
Squalo, Narvalo, Delfino, Tricheco	Cantiere N., Triestino	1930	229	19	14·5	2	810 1077	3,000 1,400	16·5 9	1 4-in. 2 M.	8 21-in.	64	..
Jalea & Jantina Serpente & Salpa	Odero-Terni Taranto	1932	201·8	18·5	13	2	599 778	1,200 800	14 8·5	1 4-in. 2 M.	6 21-in.	..	..
Santorre Santarosa Ciro Menotti Fratelli Bandiera Luciano Manara Luigi Settembrini Ruggiero Settimo	Ansaldo Monfalcone Taranto	1929 1929 1930	229	19	15·5	2	815 1078 797 1134	3,000 1,300 3,000 1,400	17·5 9	1 4-in. 2 M.	8 21-in.	50	..
E. Fieramosca	Taranto (Tosi)	1929	277	27	16·8	2	1340 1760	5,500 2,000	19 10	1 4·7-in. 4 M.	8 21-in.	66	80
M. Bragadino F. Corridoni	Taranto (Tosi)	1929 1930	233	18·6	14	2	802 1051	1,500 1,000	14 8	1 4-in., 2 M. 24 mines	4 21 m.	50	41
Ballila † A. Sciesa † E. Toti † D. Millelire †	Spezia, Ansaldo	1927 1928 1928 1927	287	25·6	13·5	2	1368 1874	4,400 2,200	18·5 9	1 4·7-in. 4 M. 16 mines	6 21-in.	66	140
V. Pisani M. Colonna A. des Geneys G. Bausan	Montfalcone, Trieste	1927 1927 1928 1928	223	18·7	13·8	2	791 1040	3,000 1,000	17·5 9	1 4-in. 2 M.	6 21-in.	35	48
G. Mameli T. Speri G. da. Procida	Taranto	1926 1928 1928	212	21·5	13	2	770 994	3,000 1,000	17 9	1 4-in. 2 M.	6 21-in.	35	48
X 2, 3	Ansaldo	1916	139·9	18	11	2	390 460	650 360	8 6	1 3 in. A.A. 1 M., 18 mines	2 18-in.	20	15
H 1, 2, 4, 6, 8	Vickers	1917	150·3	15·8	12	2	336 46	620 480	13 10	1 3-in. A.A. 1 M., H1, 4, and 6 only	4 18-in.	22	18

† Minelayers.

About 14 submarines projected.

Japan

Name or Number.	Where Built.	Launched.	Dimensions. Length (Extreme.)	Dimensions. Beam.	Dimensions. Draught.	Number of Screws.	Displacement.	Horse-Power.	Maximum Speed.	Armament.	Torpedo Tubes.	Compliment.	Fuel. Oil
DESTROYERS: *			Feet.	Feet.	Feet.		Tons.		Knots.				Tons
FIRST CLASS—													
Tanikase	Fujinagata	1939–1940	360	33·3	9	2	1500–2000	38,000	34	6 5-in.	2 24-in. (Q.)		500
Amatsukaze	Maizuru												
Tokitsukase	Uraga												
Arashi	Maizuru												
Urakaze	Fujinagata												
Hagikaze	Uraga												
Nowake	Maizuru												
Yukikaze	Sasebo												
Kuroshio	Fujinagata												
Oyashio	Maizuru												
Natsushio	Fujinagata												
Hatsukaze	Kawasaki												
Hayashio	Uraga												
Arashio	Kawasaki	1937–1938	356	33·3	9	2	1500	38,000	34	6 5-in.	2 24-in. (Q.)	200	500
Osio	Maizuru												
Michishio	Fujinagata												
Asagumo	Kawasaki												
Minegumo	Fujinagata												
Kasumi	Uraga												
Yamagumo	Fujinagata												
Natsugumo	Sasebo												
Asashio	Maizuru												
Arare	Maizuru												
Kagero	Maziuru												
Shiranuhi	Uraga												
Isokaze	Sasebo												
Yudachi	Sasebo	1935–1936	336	31·8	9·1	2	1368	37,000	34	5 5-in. 2 M.G.	2 21-in. (Q.)	200	400
Harusame	Maizuru												
Samidare	Uraga												
Umikaze	Maizuru												
Yamakaze	Uraga												
Kawakaze	Sasebo												
Suzukaze	Uraga												
Murasame	Sasebo												
Shigure	Uraga												
Shiratsuyu	Sasebo												
Hatsushima	Uraga	1933–1934	338	32·7	8·8	2	1368	37,000	34	5 5-in. guns 2 M.	2 21-in. (T)	200	400
Ariake	Kawasaki												
Yugure	Maizuru												
Wakaba	Sasebo												
Nenohi	Uraga												
Hatsuhara	Sasebo												
Oboro	Sasebo	1929–1932	371·5	34	10·7	2	1700	40,000	34	6 5-in., 2 M.	3 21-in. (T.)	200	420
Akebono	Fujinagata												
Sazanami	Maizuru												
Ushio	Uraga												
Akatsuki	Sasebo												
Hibiki	Maizuru												
Ikazuchi	Uraga												
Inazuma	Fujinagata												
Sagiri	Uraga	1929	371·5	34	10·7	2	1700	40,000	34	6 5-in., 2 M.	3 21-in. (T.)	197	420
Asagiri	Sasebo	1929											
Yugiri	Maizuru	1930											
Amagiri	Tokyo	1930											
Shikinami	Maizuru	1929											
Ayanami	Fujinagata	1929											
Fubuki	Maizuru	1927											
Shirayuki	Yokosuka	1928											
Hatsuyuki	Maizuru	1928											
Murakumo	Fujinagata	1928											
Shinonome	Sasebo	1927											
Usugumo	Ishikawa-jima (Tokyo)	— 1927											
Shirakumo	Fujinagata	1927											
Isonami	Uraga	1927											
Uranami	Sasebo	1928											

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* U.S. claimed 62 Japanese destroyers sunk by November, 1943.

Japan—*continued.*

Name or Number.	Where Built.	Launched.	Dimensions. Length (extreme).	Beam.	Draught.	Number of Screws.	Displacement.	Horse-Power.	Maximum Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel. Coal / Oil
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons
DESTROYERS—*contd.*													
FIRST CLASS—*contd.*													
Minadzuki	Uraga	1926	320 b.p.	30	9·8	2	1315	38,500	34	4 4·7-in., 2 M. A.A.	2 21-in. (T)	148	— 400
Fumitsuki	Fujinagata ..	1926											
Nagatsuki	Ishikawajima	1926											
Kikudzuki	Maizuru ..	1926											
Mikadzuki	Sasebo	1926											
Mochidzuki	Uraga ..	1927											
Yudzuki	Fujinagata	1927											
Yayoi	Uraga	1924, 25											
Udzuki	Ishikawajima	1925											
Mutsuki	Sasebo	1924, 25											
Kisaragi	Maizura ..	1925											
Satsuki	Fujinagata ..	1925											
Oite	Uraga	1924, 25	320 b.p.	30	9·6	2	1270	38,500	34	4 4·7-in., 2 M. A.A.	3 21-in. (D)	148	— 400
Hayate	Ishikawajima	1925											
Yunagi	Sasebo	1924, 25											
Kamikaze ..	Nagasaki ..	1922											
Asakaze													
Harukaze ..	Maidzura ..	1922–24											
Matsukaze ..													
Hatakaze													
Asanagi	Fujinagata ..	1924											
Sawakaze													
Okikaze, Shimakaze, Nadakaze, Yukaze, Hakaze, Minekaze	Nagasaki ..	1919–22	320 b p.	29·25	9·5	2	1215	38,500	34	4 4·7-in. 2 M. A.A.	3 21-in. (D)	149	— 400
Namikaze, Numakaze, Nokaze, Tachikaze, Shiokaze, Hokaze, Yakaze, Akikaze	Maidzuru .. Mitsubishi, Kawasaki, Maidzuru	1926–22											
SECOND CLASS—													
Wakatake ..	Kawasaki, Kobe	1922	275 b.p.	26·5	8·3	2	820	21,500	31·5	3 4·7-in., 2 M. A.A.	2 21-in. (D)	110	— 250
Kuretake ..													
Fuyo	Fujinagata ..	1922, 23											
Karukaya ..													
Asagao	Ishikawa-jima	1922–23											
Yugao													
Sanaye	Uraga	1923											
Yanagi, Momo ..	Sasebo	1916–18	275·0 b.p.	25·3	7·9	2	755	16,000	31·5	3 4·7 in., 2 M.	2 18-in. (T)	109	92 212
Hinoki	Maidzuru ..												
Kaki	Kawasaki ..	1917–19	275·5 b.p.	26	8	2	770	21,500	31·5	3 4·7 in., 2 M. A.A.	2 21-in. (D)	80	— 290
Kuri	Kure												
Nire, Tsuga	Ishikawa-jima												
Hagi	Uraga	1920–1922	275·5 p.p.	26	8	2	770	21,500	31·5	3 4·7 in. 2 M., A.A.	2 21-in. (D)	80	— 290
Susuki, Yomogi	Ishikawa-jima												
Sumire													
Hishi, Hasu	Uraga,												
Tade, Fuji	Fujinagata,												
Aoi, Kiku ..													
Tsuta, Ashi, ..	Kawasaki												
Nashi, Take	Kobe												
Kaya	Yokosuka ..												
TORPEDO BOATS—													
Chidori	Maizuru ..	1933	254	24	6	2	527	7000	26	3 4·7 in.	2 21-in.	..	..
Manazuru	Fujinagata												
*Tomazuru	Maizuru ..	1933											
Hatsukari	Fujinagata												
†Yamasemi	Schichau ..	1912	196	21	9	2	390		20	2 3-in.	..	..	..
‡Kawasemi	Kawasaki ..	1908	135	15½	7·2	1	96	1200	23	1 1·85-in., 1 1·5-in.	3 14-in.	41	18 —
Otori	Maizuru	1935	263	26	6¾	2	595	9000	28	3 4·7-in. 1 M.G.	3 21 in.	..	..
Hiyodori	Ishikawa-jima												
Hayabusa	Yokohama												
Kasasagi	Osaka												
Kari	Mitsubishi												
Sagi	Harima												
Hato	Ishikawa-jima												
Kiji	Mitsui Tama												

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* Capsized in 1934 but has been repaired and put into commission again. † *ex*-Chinese Chien Kang. ‡ *ex*-Chinese Hu Ngo.

A number of the above ships have been destroyed.

Japan—*continued.*

Name or Number.	Where Built.	Launched.	Dimensions. Length (extreme).	Dimensions. Beam.	Dimensions. Draught.	Number of Screws.	Displacement.	Horse-Power.	Maximum Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel Oil
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
SUBMARINES *—													
I68	Kure	1933	331	27	13	2	Surf./Sub. 1400/—	6000/—	20/—	1 3·9 in.	6 21-in.	60	..
I69	Kobe	1934											
I70	Sasebo.. ..												
I71	Kawasaki ..												
I72 and I73	Kawasaki .. Mitsubishi	1935								1 4.7-in.	6 21-in.	60	..
I74 and I75	Sasebo .. Mitsubishi..	1936											
I9–I24	..	1939	344	29·9	14·4	2	1950/2600	6000/—	17/—	2 5·5-in.	4 21-in.	60	..
I25–I34	..	1940											
I8	Kawasaki ..	1935	344	29·9	14·4	2	1950/2500	6000/1800	17/9	2 5·5-in.	4 21-in.	60	..
I7	Kure												
I6	Kawasaki ..	1934	320	30	15·7	2	1900/2500	6000/1800	17/9	1 5-in. 1 seaplane	6 21-in.	60	..
I5	Kawasaki ..												
I65	Kure	1931	321	26·9	15·9	2	1638/2100	6000/1800	19/9	1 4-in. 1 M.	6 21-in.	70	..
I66	Sasebo ..												
I67	Kobe												
I62	Kobe	1928	320½	25·7	16	2	1635/2100	6000/1800	21/7·9	1 4·7-in.	6 21-in.	56	255
I64	Kure	1929											
I4	Kawasaki ..	1929	320	30·2	15·7	2	1955/2480	6800/1800	17/9	2 5·5-in. 1 M.	6 21-in.	61	520
I1, I2, I3 ..	Kawasaki ..	1926											
†I121 *ex* I21	..	1927	279½	24·6	14	2	1142/1470	2400/1200	14/9·5	1 5·5-in.	4 21-in.	45	..
†I122 *ex* I22	Kawasaki ..	1928											
†I123 *ex* I23		1928											
†I124 *ex* I24		1928											
I53	Kure	1927	331½	26	16	2	1635/2100	6000/1800	21/7–9	1 4·7-in.	8 21-in.	56	255
I55	Kure	1927											
I56	Kure	1929											
I54	Sasebo ..	1927											
I63	Sasebo ..	1928											
I60	Sasebo ..	1929											
I59	Yokosuka ..	1929											
I58	Yokusuka ..	1928											
I57	Kure	1929											
Ro. 33	Kure	1934	239½	22	10·5	2	700	1200	16/—	1 3·15-in. A.A.	4 21-in.	..	..
Ro. 34	Mitsubishi..	1935											
Ro. 31	Mitsubishi..	1927	243½	20	12·4	2	655/1000	1200/1200	13/10	1 4·7-in. A.A.	4 21-in.	43	75
Ro. 60–68..	Mitsubishi..	1924–26	250	24·2	12·4	2	988/1300	2400/1800	16/10	1 3·15-in. A.A., 1 M.	6 21-in.	47	75
I. 51	Kure ..	1924	300	28·7	15	2	1390/2000	6000/1800	19/7–9	1 4·7-in.	8 21-in.	60	190
I. 52		1925	330	25	16·8								
Ro. 30–32	Kawasaki .. Kawasaki ..	1924 1923	243·5	20	12·4	2	655/1000	1200/1200	13/10	1 4·7-in.	4 21-in.	43	75
Ro. 28	Sasebo ..	1923	243·5	20·1	12	2	746/1000	2600/1200	16/10	1 3·15-in. 1 3-pr.	4 21-in	45	75
Ro. 27	Yokosuka ..	1924											
Ro. 26	Sasabo ..	1922											
Ro. 57	Kure	1923	250	23·5	13	2	889/1082	2400/1200	17/10·5	1 3·15-in. 1 3-pr.	4 21-in.	65	76
Ro. 58, 59	Yokosuka ..	1922											
Ro. 54–56	Mitsubishi..	1922	231·5	23·5	13	2	893/1082	2400/1200	17/10·5	1 3·15-in. H.A., 1 3-pr.	6 18-in.	65	76
Ro. 53	Mitsubishi..	1921											
Ro. 51	Mitsubishi..	1920											
Midget Class			75										

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* U.S. claimed 6 Japanese submarines sunk by November, 1943.

† Fitted for minelaying.

Netherlands.*

Name or Number.	Where built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Horse-power.	Maximum speed.	Armament.	Torpedo Tubes.	Complement.	Fuel.
			Length. (Extreme.)	Beam.	Draught.								Coal / Oil
			Feet.	Feet.	Feet.		Tons.		Knots				Tons
DESTROYERS—													
Jan van Galen Tjerk Hiddes	*ex*-British	1941	..	..	..	..	..	..	..	6 4·7-in.	..	..	..
1ST CLASS TORPEDO BOATS—													
G 13, 15 and 16 ..	Scheldt Fijenoord	1913–1914	162·5	17·3	9·0	1	150	2,600	25	2 3-in.	3 17·7-in.	27	40 / —
Z 3	Amsterdam	1917	201	20·4	6	2	277	5,500	27	2 3-in., 2 M.	4 17·7-in.	48	61 / 8
Z 5–8 ..	Scheldt Fijenoord	1915	192	19·8	5·5	2	264	5,500	27	2 3-in., 2 M.	4 17·7-in.	48	70 / 7
SUBMARINES—							Surf. / Sub.						
†Dolfijn ..	*ex*-British	..	..	..	..	..	..	..	..	..	..	..	..
K XIV .. K XV ..	Rotterdam	1932–3	242	21·5	12·5	2	770 / 1,030	3,200 / 1,000	17 / 9	1 3·5-in., 2 2-pr.	8 21-in.	35	..
O 19	Rotterdam	Bldg.	265	24·6	12·5	2	966 / 1,020	5,000 / —	17 / 9	1 3·5-in., 2 1·5-in.	8 21-in.	36	..
O XXI .. O 23 .. .. O 24 .. .. O 25 .. .. O 26 .. .. O 27	De Schelde Rotterdam Rotterdam Wilton Fijenoord	1939 1939 1940 1940 Bldg. Bldg.	254½	25½	13	2	888 / 1,205	5,000 / —	20 / 9	1 3·5-in. 2 1·5-in.	8 21-in.	37	Oil
O 14 .. O 15 ..	De Schelde	1931	199	18·7	11·5	2	560 / 700	1,900 / 600	15 / 8	2 1·5-in. A.A.	5 21-in.	31	..
K XII .. K XI ..	Fijencord	1924	218 8	20·2	12·2	2	660 / 810	2,400 / 725	15 / 8	1 3·5-in. 1 maxim	6 17·7-in.	31	— / 45
O 10 O 9	Amsterdam Flushing	1925	179½	18·7	11½	2	506 / 627	900 / —	12½ / 9	1 22-pr. A.A., 1 maxim	5 21-in.	29	— / 21

* Under the control of Germany. † Under British control

A Netherlands Submarine operating with the British Navy reported lost.

Norway.*

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Horse-Power.	Maximum Trial Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel. Coal / Oil
			Length. (Extreme)	Beam.	Draught.								
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
Destroyers—													
2 Destroyers	Horten ..	Bldg.	319	32·9	8·9	2	1220	30,000	34	4 4·7-in. 2 1·57-in.	4 21-in.	120	..
Draug, Troll	Horten ..	1908–13	226	22·5	8.8	2	540	7,500	27·0	6 3-in. Draug has 6 4·7-in. in addition	3 18-in.	71	95 / 6
Two Destroyers ..	ex-British ..												
Torpedo Boats:													
First Class—													
Snogg	Horten ..	1919-1920	173·9	18	5½	2	250	3,500	25	2 3-in.	4 18-in.	31	30 / —
Brand	Horten ..	1900	130·9	16·0	6·9	1	100	1,100	21	2 M.	2 18-in.	19	17 / —
Laks.. .. .. .. Sild..	Horten ..	1900	126·4	15·0	6·9	1	100	1,150	21·8	2 M.	2 18-in.	19	
Sleipner .. .. .. Gyller	Horten ..	1936	236·3	25·5	6·9	2	625	12,500	30	3 4-in., 1 1·5-in. A.A.	2 21-in.	72	— / 100
Odin, Balder, Tor ..	Fredrikstad	1939											
Second Class—													
Kjek, Hvas	Fredrikstad	1898	114·5	14·5	6·0	1	73	650–750	19–20	2 M.	2 18-in.	14	11 / —
Hauk, Falk	Horten ..	1903											
Skarv, Toist	Horten ..	1906–7	133	14·5	6·5	1	100	1,600	25	2 3-pr.		18	16 / —
Lom			117	14·5	5·7	1	72	1,100	23	2 M.		16	15 / —
Orn	Horten ..	1903	113	14·5	5·7	1	73	850	23	2 M.		16	
Kjell..	Horten ..	1912	135	14·9	6·4	1	100	1,800	25	2 3-pr.		19	15 / —
Submarines—													
B 1.	Horten ..	1922	167·3	17·5	10·5	2	413 / 545	900 / 640	14·5 / 10	1 3-in.	4 18-in.	23	— / 21
One Submarine ..	ex-British ..												

* Under the control of Germany.

Soviet Union.

Some of the details given below are uncertain.

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Horse-Power.	Designed Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel
			Length. (Extreme.)	Beam.	Draught.								Oil
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
FLOTILLA LEADERS—													
Leningrad	..	1935	430	..	..	..	1950	..	..	5 5·1-in. 2 3-in. A.A.	21-in.	..	..
Kharkov	..	1936											
Minsk	..	1936											
Perekop	..	1937											
Stalingrad	..	1937											
Moscow	..	1937											
Kiev	..	1937											
Volochevka	..	1937											
Arkhangelsk	..	1940											
Kronstadt	..	1939											
Murmansk	..	1940											
Petrosavodsk	..	1940											
DESTROYERS—													
Bdeetelni	..	1938–1940	..	..	..	2	1600	50,000	38	4 5·1 in., 2 1·5 A.A.	6 21-in.	..	..
Bestrashni													
Bezuprechny													
Boiki													
Bystry													
Reshitelni													
Serditi													
Smely													
Smetlivy													
Gromki													
Grozni													
Bodri													
Gnevni													
Gordy													
Gremyashchi													
Grozovoy													
Grozyashchi													
Besposhtchadni													
Felix Dzerzhinski	Ship & Eng. Co., Nikolaev	1917	303	29·5	10·5	2	1326	29,000	28	4 4-in., 2 7-pr., 4 M., can carry 80 mines	12 18-in. (T.)	120	390
Petrovski													
Nezamojni													
Shaumyan													
Kalinin	Revel	1915	344·5	31·3	9·7	2	1350	32,700	35	5 4-in., 1 3-in. A.A., carries mines	9 18-in. (T.)	120	400
Karl Liebknecht	Leningrad	1914	321	31	9·25	2	1610	32,000	29	4 4-in., 1 3-in. A.A., 2 M., 80 mines	9 18-in. (T.)	110	400
Uritsky													
Volodarski		1914 – 1915	315	31	10	2	1260	30,000	28			110	350
A. Zhdanov													
Engels													
Stalin													
Artem													
Volkov													
Bezpochtachadni (ex-Frunze)	Leningrad	1914	336	31·1	9·8	2	1100	23,000	34	4 4-in., 1 3-in., 4 M.	6 (D.)	120	350
Sneg	Nikolaev	1932	236	24	10	2	700	13,200	29	2 4-ins., 3 3-in., 2 M. 40 mines.	9 18-in.	72	..
Shtorm													
Shkval													
Groza, Metali, Smertsch, Taifun, Uragan, Wiche, Vyuga, Tsiklon, Grom, Vikhr, Burya. Purga, Tucha	Leningrad	1933–35	236	24	10	2	700	13,200	29	2 4-in., 3 3-in., 2 M. 40 mines	9 18-in.	72	..
Sovnarkom													
Stamor													
Sokki													
Sibirsk													
Molniya													
Sasovyets													
Serp													
Zarnitza													
Lukoi													

Soviet Union—*continued.*

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Horse-Power.	Designed Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel.
			Length. (Extreme.)	Beam.	Draught.								Oil
GUARD SHIPS—			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
Dserschinski .. .. Kirov	Ansaldo	1934	250	27	9	3	800	5,400	20	2 4-in., 4 1·5-in.		120	44
SUBMARINES—													
Chartist .. .. Garibaldiets .. .. Karbonari	.. .. ..	1930–1933	..	..	..	..	1039/1335	..	..	1 4-in. 1 M.G.	6 21-in.	..	..
Dekabrist .. .. Narodovoleets .. Krasnogvardeets ..	.. .. ..	1931	240	23	13¾	2	869/1318	2500/1200	15/8	1 4-in., 1 1·5 in., 1 M.	8 21-in.	44	78
Komsomolka ..	..												
Jacobinets .. .. Revolusioner .. Spartakovets ..	.. .. ..	1931											
12 others	..	1936											
About 100 Type M	..	1935–1941	150	..	..	..	200/	..	13/8	1 1·5-in.	2 18-in.	..	..
About 100 Type Schtsch	..	1935-1941	200	..	..	..	500/	..	..	1 1·5-in.	6 21-in,	..	..
Pravda .. .. .. Iskra .. .. .. Zvezda and 4 others	..	1936	..	..	..	..	1200/1800	..	..	2 4-in., 2 M.	8 21-in.	..	..
Bolshevik .. .. Komissar .. .. Kommunar .. .. Tovarisnch .. .. Krasnoarmeets .. Krasnoflotets .. Bednyak .. .. Proletarii .. .. Batrak .. .. .. Rabochi .. .. Metallist .. .. Kommunist .. .. Marxist .. .. .. Politrabotrik ..	St. Petersburg	1916–1917	223	14¾	12·6	2	650/790	2600/900	16/9	2 6-pr., 1 M.G.	4 18-in.	33	40
L55 (*ex*-British) ..	..	1917	230	24	13	2	870/1139	2400/1600	17/10	1 4-in., 1 M.G.	6 21-in.	28	78
*Lembit .. .. *Kalev	Vickers	1937	190	24½	11	2	620/820	1200/700	13½/8½	1 1·57-in., 20 mines	4 21-in.	40	

* *ex*-Estonian.

Spain.

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Horse-Power.	Maximum Trial Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel Coal/Oil
			Length. (Extreme.)	Beam.	Draught.								
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
DESTROYERS—													
Gravina	Cartagena ..		333	31·7	10·5	2	1536	42,000	36	5 4·7-in. 1 3-in. A.A. 4 M.	6 21-in. (T.)	175	—/540
Escano													
Ciscar		1934											
Jorge Juan													
Ulloa													
Almirante Valdés ..		1930											
,, Antequera		1930											
,, Miranda		1931											
Churruca		1929											
Alcala Galiano ..		1930											
Lepanto		1928											
José Luis Diez ..		1928											
Sanchez-Barcaiztegui		1926											
Juan Lazaga	Cartagena ..	1924	283	27	9	2	1044	33,000	34	3 4-in., 2 1·85-in. A.A.	2 21-in. (D.)	70	—/265
Valeseo		1923											
Alsedo		1922											
Velasco Ceuta ..	Naples ..	1920	310	31	10	2	1706	60,000	34	4 4·7-in. 2 3-in. 2 M.	2 17·7″ (D)	139	—/260
Velasco Melilla ..													
Huesca	Ansaldo ..	1915	170	26	8	2	850	20,000	32	5 4-in. 2 1·57-in. A.A. 2 M.	2 17·7″ (D.)	99	—/250
Teruel													
TORPEDO BOATS—													
T 7, 9, 14, 16, 17, 18, 19	Cartagena ..	1913–1922	164	16·5	6½	3	187	3750	26	3 1·9-in.	3 18-in.	31	33/—
SUBMARINES—													
D1, 2, 3	Cartagena ..	1934–1935	276	21·8	13	2	1050/1375	5000/1350	20·5/9·5	1 4·7-in., 4 M.	6 21-in.	..	..
C 2, 4 .. .. .. Isaac Peral (*ex*-C 1)	Cartagena ..	1928–1929	247	20·8	13·5	2	900/1270	2000/750	16/8·5	1 3-in. A.A.	6 21-in.	40	200
B 2	Cartagena ..	1921–24	210	18·9	11·25	2	560/830	1400/850	16/10·5	1 3-in. A.A.	4 18-in.	28	—/66
General Mola .. .. General Sanjurjo ..	Taranto	1934	231·5	22.5	13	2	880/1230	3000/1300	17/8·5	2 3·9-in. 2 M.G.	8 21-in.	48	150

Sweden.

Name or Number.	Where Built.	Launched.	Dimensions.			Number of Screws.	Displacement.	Horse-Power.	Maximum Trial Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel
			Length. (Extreme.)	Beam.	Draught								Coal/Oil
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons
DESTROYERS—													
Mode ..	Gothenburg ..	Bldg.											
Magne ..													
Munin ..													
Mjolner ..													
Gavle ..	Gothenburg ..	1940	304	29·5	12·5	2	1020	32,000	39	3 4·7-in. 4 1-in.	6 21-in.	131	—/150
Norrkoping		1940											
Karlskrona	Karlskrona ..	1939											
Stockholm		1936											
Malmo ..	Goteborg ..	1938											
Goteborg		1935											
Klas Horn ..	Malmo	1931	304·2	29·2	10·5	2	1,000	24,000–26,000	35	3 4·7-in., 2 2-prs. A.A., 2 M.	2 trpl. 21-in.	125	—/150
Klas Uggla ..	Karlskrona												
Ehrensköld ..	Göteborg	1926											
Nordenskjold ..	Malmö												
Wale	Malmo ..	1906	216	20·8	9	2	354	8,000	30	2 3-in., 4 6-prs.	4 18-in.	69	80/—
Ragnar ‡ ..	Malmo ..	1909	216	20·8	9	2	354	8,000–9,000	30·0	4 3-in., 2 M.	2 18–in. (D.)	67	80/3
Sigurd	Gothenburg ..	1909											
Vidar	Malmo ..	1909											
Hugin	Gothenburg ..	1909											
Munin	Malmo ..	1910											
Wrangel ‡	Gothenburg ..	1917	232·8	22	9·2	2	458	11,000	34·0	4 3-in., 2 M.	6 18-in.	72	107/6
Wachtmeister													
Malmo	Gothenburg ..	1938	304	29·5	12·5	2	1,030	32,000	39	3 4·7-in. 4 M.	6 21-in.	130	—/150
Karlskrona ..	Karlskrona ..	1939											
Norrkoeping ..	Gothenburg ..	1940											
Gjaevle	Gothenburg ..	1940											
†Puke (*ex*-Ricasoli)	Naples ..	1926	278·6	28·2	8·7	2	935	36,000	35	4 4·7-in., 2 1·5-in. A.A., 2 M. 40 Mines	4 21-in.	106	—/200
†Psilander (*ex*-Nicotera)													
†Romulus (*ex*-Spica)	Naples ..	1934	263·6	26·9	7·4	2	638	19,000	34	3 3·9-in., 6 1·5-in. A.A.	4 17·7 in.	..	..
†Remus (*ex*-Astore)													
4 in Number ..	..	Bldg.	..	..	..	..	1,000	..	..	..	..	..	..
SUBMARINES—													
1st Class—													
Dykaren ..	Kockum ..	1941	204	20·5	11	2	530/760	2,000/—	15/10	1 4-in., 2 M.	6 21-in.	..	..
Sjoborren													
Sjohasten													
Sjoormen													
Svardfisken													
Tomlaven													
Ulven ..	Naval Yard, Karlskrona	1930	213	21	10·8	..	700/850	2,800/—	16/9	1 4-in., 1 M.	4 20-in.	32	—/40
Draken ..		1926											
Gripen ..		1928											
Bavern ..	Naval, Yard, Karlskrona	1921	185	18·5	9·2	..	500/650	2,800/—	15/9	1 3-in., 1 M.	4 18-in.	..	—/33
Illern ..													
Uttern ..													
Sälen ..	Kockum Co., Malmo	1920	171	16·5	11·5	..	450/580	2,800/—	..	1 3-in., 1 M.	4 18-in.	..	—/23
Valrossen													
Hajen ..													
Valen ‡	Kalskrona ..	1925	186	23·2	9·4	..	492/650	..	15/9	1 3-in., 1 M.	4 18-in.	..	—/34
Nordkaparen	Kockum	1935	199	20¾	11	..	500/720	..	15/10	1 4-in.	4 21-in.	28	..
Delfinen ..													
Springaren													
Sjolejonet		1936											
Sjobjornen ..			204	20½	11	2	620/—	..	15/10	1 4·1-in., 2 M.G.	4 21-in.	32	..
Sjohunden ..	Kockum ..	1938											
U 1, 2, 3.. ..	Kockum ..	1941	..	..	..	..	367	..	..	..	..	..	..
Several in number	..	Bldg.	..	..	..	..	..	..	..	..	..	..	..

† *Ex*-Italian.

‡ Fitted for mine-laying.

United States.

Name or Number.	Where built.	Completed.	Dimensions.			Number of Screws.	Standard Displacement.	Horse-Power.	Maximum Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel. Oil.
			Length. (Extreme.)	Beam.	Draught.								
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
DESTROYERS—													
Barton ..													
Benham ..													
Cushing ..													
Laffey ..													
Monssen ..													
Preston ..													
Walke													
Putnam ..													
Ingersoll ..													
Harman ..	Bethlehem, Fore Kiver	1.9.43											
Reynolds ..	Bethlehem, Hingham	3.11.43											
Fletcher ..	Boston, N.Y.	1942-3	..	..	..	..	..	..	..	— 5-in. guns	..	..	..
Radford ..													
Jenkins ..	Charleston, N.Y.												
La Vallette ..	Federal S.B. Co.												
Nicholas ..	Bath, I.W.												
O'Bannon ..													
Chevalier ..	Federal S.B. Co.												
Saufley ..													
Waller ..													
Taylor ..	Bath I.W.												
Bache ..	Bethlehem												
Beale ..													
Guest.. ..	Boston, N.Y.												
Bennet ..													
Fullam ..													
Hudson ..													
Hutchins ..													
Pringle ..	Charleston, N.Y.												
Stanly ..													
Stevens ..													
Halford ..	Puget Sound, N.Y.												
Leutze ..													
Watson ..	Federal S.B. Co.												
Philip ..													
Renshaw ..													
Ringgold ..													
Schroeder ..													
Sigsbee ..													
Conway ..	Bath, I.W.												
Cony													
Converse ..													
Eaton ..													
Foote.. ..													
Spence ..													
Terry.. ..													
Thatcher ..													
Anthony ..													
Wadsworth ..													
Walker ..													
Brownson ..	Bethlehem, Staten Island												
Daly													
Isherwood ..													
Kimberley ..													
Luce													
Abner Read ..	Bethlehem, San Franisco												
Ammen ..													
Mullany ..													
Bush													
Trathen ..													
Hazelwood ..													
Heerman ..													
Hoel													
McCord ..													
Miller.. ..													
Owen.. ..													
The Sullivans	..	Launch 6.4.43											
Stephen Potter													
Tingey ..													
Twining ..													
Yarnall ..													
Boyd ..	Bethlehem, San Pedro												
Bradford ..													
Brown ..													
Cowell ..													

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* Some of these vessels completed in 1942.

United States—*continued.*

Name or Number.	Where built.	Completed.	Dimensions.			Number of Screws.	Standard Displacement.	Horse-Power.	Maximum Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel. Oil.
			Length. (Extreme.)	Beam.	Draught.								
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
DESTROYERS—*continued.*													
Capps	Gulf S.B. Co.	1942–3*	..	..	..	..	..	..	..	— 5-in. guns	..	..	..
David W. Taylor													
Evans													
John D. Henley													
Franks	Seattle Tacoma S. B. Co.												
Haggard													
Hailey													
Johnston													
Laws	Seattle-Tacoma S.B. Co.												
Longshaw													
Morrison													
Pritchett													
Robinson													
Roes													
Rowe													
Smalley													
Stoddard													
Watts													
Wren													
Aulick	Consolidated Steel Co., Orange												
Charles Ausburn													
Claxton													
Dyson													
Harrison													
John Rodgers													
McKee													
Murray													
Sproston													
Wickes													
William D. Porter													
Young													
Charette	Boston, N.Y.												
Conner													
Hall													
Halligan													
Haraden													
Newcomb													
Bell	Charleston, N.Y.												
Burns													
Izard													
Paul Hamilton													
Twiggs													
Howorth	Puget Sound, N.Y.												
Killen													
Mansfield													
Metcalfe													
Shields													
Wiley													
Abbott	Bath, I.W.												
Braine													
Erben													
Hale													
Sigourney													
Stembel													
Ellyson	Federal S.B. Co.												
Hambleton													
Rodman													
Emmons	Bath, I.W.												
Macomb													
Woodworth	Bethlehem, San Francisco												
Forrest	Boston, N.Y.												
Fitch													
Corry	Charleston, N.Y.												
Hobson													
Buchanan	Federal S.B. Co.												
Lansdowne													
Lardner													
McCalla													
Mervine													
Quick													

* Some of these vessels completed in 1942.

United States—*continued*.

Name or Number.	Where built.	Completed.	Dimensions.			Number of Screws.	Standard Displacement.	Horse-Power.	Maximum Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel.
			Length. (Extreme.)	Beam.	Draught.								Oil.
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons
DESTROYERS—*continued*.													
Farenholt ..	Bethlehem, Staten Is.	1942–3	..	..	..	..	..	..	..	..	..	..	..
Bailey ..													
Carmick ..	Seattle-Tacoma S.B. Co.												
Doyle.. ..													
Endicott ..													
McCook ..													
Frankford ..													
Bancroft ..	Bethlehem, Fore River												
Boyle.. ..													
Champlin ..													
Meade ..	Bethlehem, San Francsico												
Murphy ..													
Parker ..													
Caldwell ..													
Coghlan ..													
Frazier ..													
Gansevoort ..													
Gillispie ..													
Hobby ..													
Kalk													
Kendrick ..	Bethlehem, San Pedro												
Laub													
MacKenzie ..													
McLanahan ..													
Nields ..													
Ordronaux ..													
Dawison ..	Federal S.B. Co.												
McDermut ..													
Lewis Hancock													
Edwards ..													
Glennon ..													
Jeffers ..													
Nelson ..													
Stevenson ..													
Stockton ..													
Thorn ..													
Turner ..													
Baldwin ..	Seattle-Tacoma S.B. Co.												
Harding ..													
Satterlee ..													
Thompson ..													
Welles ..													
Cowie.. ..	Boston, N.Y.												
Knight ..													
Doran ..													
Earle ..	Philadelphia, N.Y.												
Butler ..													
Gherardi ..													
Reuben James	..	L'nched 13.1.43											
Herndon ..	Norfolk, N.Y.												
Shubrick ..													
Beatty ..	Charleston, N.Y.												
Tillman ..													
Jouett ..	Bath, I.W.	1939	381	36½	10⅓	2	1,850	50,000	37	8 5-in. 8 1·1 in. A.A.	8 21-in.	200	500
Davis.. ..		1938											
Sampson ..	Federal S.B. Co.	1938											
Warrington ..		1938											
Somers ..		1938											
Winslow ..	New York S.B. Co.	1937											
McDougall ..		1937											
Selfridge ..		1937											
Balch.. ..	Bethlehem, Fore River	1937											
Moffett ..		1937											
Clark ..		1936											
Phelps ..		1936											
Anderson ..	Federal S.B. Co.	1939	341 W.L.	35½	10⅓	2	1,720	50,000	37	5 5-in.	12 21-in.	160	..
Swanson ..	Charleston, N.Y.	1941	341 W.L.	35½	10½	2	1,630	50,000	37	5 5-in.	10 21-in.	..	„
Nicholson ..													
Woolsey ..	Bath, I.W.	1941											
Wilkes ..	Boston, N.Y.	1941											
Ericsson ..													
Ludlow ..													
Grayson ..	Charleston, N.Y.	1941											

United States—*continued.*

Name or Number.	Where built.	Completed.	Dimensions.			Number of Screws.	Standard Displacement.	Horse-Power.	Maximum Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel Oil.
			Length. (Extreme.)	Beam.	Draught.								
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
DESTROYERS—*continued.*													
Edison ..	Federal S.B. Co.	1941											
Eberle ..	Bath, I.W.	1940											
Livermore ..													
Kearney ..	Federal S.B. Co.	1940											
Plunkett ..													
Charles F. Hughes	Charleston		341 W.L.	35½	10¼	2	1,620	50,000	37	5 5-in.	10 21-in.	..	..
Hilary P. Jones	Puget Sound												
Lansdale ..	Boston, N.Y.												
Madison ..		1939–1940											
Niblack ..	Bath, I.W. Maine												
Gleaves ..													
Mayo ..	Bethlehem S. Co. Quincy												
Benson ..													
Wainwright ..	Norfolk, N.Y.												
Roe	Charleston N.Y.	1939											
Morris ..	Norfolk N.Y.		341 W.L.	35½	10¼	2	1,570	50,000	37	5 5-in.	12 21-in.	160	..
Russell ..	Newport News												
Mustin ..		1939											
Hughes ..	Federal S.B. & D.D. Co.												
Wilson ..	Puget Sound												
Sterrett ..	Charleston N.Y.	1938											
Stack ..	Norfolk, N.Y.												
Rhind ..	Philadelphia, N.Y.												
Trippe ..	Boston, N.Y.												
Mayrant ..	Boston, N.Y.												
Maury ..	Bethlehem S.B. Co.												
McCall ..													
Lang	Federal S.B. & D.D. Co.												
Ellet			334 on W.L.	34¾	9¾	2	1,500	50,000	37	4 5-in.	16 21-in.	155	..
Patterson ..	Navy Yard, Puget Sound	1938 1939											
Henley ..	Navy Yard, Mare Is.												
Ralph Talbot	Navy Yard, Boston												
Mugford ..													
Helm ..	Navy Yard, Norfolk	1936–1938											
Bagley ..													
Craven ..	Bethlehem S.B. Co.	1936											
Gridley ..		1937											
Fanning ..	United D.D. Co.												
Dunlap ..													
Mahan ..	United D.D. Inc., N.Y.												
Cummings ..													
Drayton ..	Bath, I.W. Co.												
Lamson ..													
Flusser ..	Federal S.B. & D.D. Co.												
Reid													
Case	Navy Yard, Boston												
Conyngham ..		1936–1938	334 on W.L.	34¾	9¾	2	1,500	42,800	36½	4 5-in. guns, 8 M.G.	12 21-in.	190	..
Tucker ..	Navy Yard, Norfolk												
Shaw	Philadelphia, N.Y.												
Perkins ..	Navy Yard, Puget Sound												
Smith ..	Navy Yard, Mare Is.												
Dale	Navy Yard, N.Y.												
Monaghan ..	Navy Yard, Boston	1935	334	34¼	9¼	2	1,395 1,395 1,375	42,800	36½	4 5-in. A.A., 8 M.G.	8 21-in. (Q)	160	400
Aylwin ..	Navy Yard, Philadelphia												

United States—*continued.*

Name or Number.	Where built.	Completed.	Dimensions.			Number of Screws.	Displacement.	Horse-Power.	Maximum Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel. Oil.
			Length. (Extreme.)	Beam.	Draught.								
DESTROYERS—*continued.*			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
Farragut ..	Bethlehem S.B. Co.	1934	334	34½	9½	2	1,365	42,800	36½	4 5-in. A.A., 8 M.G.	2 Q. 21-in.	160	400
Dewey ..	Bath, I.W.Co.						1,345						
Hull	Navy Yard, N.Y.						1,395						
MacDonough	Navy Yard, Boston	1935					1,395						
Worden ..	Navy Yard Puget Sound						1,410						
*William B. Preston ..	Norfolk, N.W.	1920	314·4	31	9·8	2	1,190	26,000	35	4 4-in., 1 3-in. A.A. (Kane, Fox, Brooks, Gilmer, and Hatfield have 4 5-in. guns.)	4 triple 21-in.	122	375
Noa		1921											
*Hulbert ..		1920											
Decatur ..	Navy Yard, Mare Island.	1922											
†Perry ..		1922											
Trever ..		1922											
Wasmuth ..		1921											
†Zane		1921											
Litchfield ..		1920											
*Thornton ..	Bethlehem S.B. Co., Squantum	1919						27,000					
*Ballard ..													
*Greene ..													
*Gillis	Bethlehem S.B. Co., Quincy												
*Osmond Ingram ..													
*Belknap ..													
Lawrence ..	New York S.B. Co.	1921											
†Hopkins ..		1921											
Barry ..		1920											
Goff		1921											
Bainbridge ..		1921											
*Williamson ..		1920											
Sands ..													
King ..													
*Childs ..													
Overton ..													
*McFarland ..													
Humphreys ..													
Kane ..													
Fox													
Gilmer ..													
Brooks ..													
Hatfield ..													
Paul Jones ..	Cramp, Pa.	1921											
John D. Ford		1920											
McCormick ..	Cramp, Pa.	1920	314·4	31	9·8	2	1,190	26,000	35	4 4-in., 1 3-in. A.A. (Parrot, Whipple, Edws. & Borie have 4 5-in. guns.)	4 triple 21-in.	122	375
Bulmer ..													
Simpson ..													
MacLeish ..													
Parrott ..													
Whipple ..													
J. D. Edwards													
Borie													
Barker ..		1919	314·4	31	9·8	2	1,190	27,000	35	4 4-in., 1 3-in. A.A. (Long and Hovey have 6 4-in. twin mtgs. and 1 3-in. A.A.)	4 triple 21-in.	122	375
Broome ..													
Long													
Hovey ..													
†Southard ..													
†Chandler ..													
Dallas ..	Newport News S.B. Co.	1920	314·4	31	9·8	2	1,190	25,000	35	4 4-in., 1 3-in. A.A.	4 triple 21-in.	122	375
*George E. Badger ..		1921											
*Goldsborough		1920											
‡Dahlgren ..													
*Clemson ..		1919											

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* Seaplane tenders. † Minesweepers.

‡ Experimental vessel.

United States—*continued.*

Name or Number.	Where built.	Completed.	Dimensions. Length. (Extreme.)	Dimensions. Beam.	Dimensions. Draught.	Number of Screws.	Displacement.	Horse-Power.	Maximum Speed.	Armament.	Torpedo Tubes.	Complement.	Fuel. Oil.
DESTROYERS—*continued.*			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
†Stansbury †Howard †Hogan Crosby	Union, I.W. Fore River S.B. Co.	1919 1918	314·4	31	9·8	2	1,060	27,000	35	4 4-in., 1 3-in. A.A.	4 triple 21-in.	122	283
†Palmer Herbert Schenck Leary Dickerson	N.Y. S.B. Co.	1919	314·4	31	9·8	2	1,090	26,000	35	4 4-in., 1 3-in. A.A.	4 triple 21-in.	122	28
J. Fred Talbot Cole Ellis Bernadou Dupont Biddle Blakeley Barney Breckinridge Roper Elliot Greer Tarbell Upshur	Cramp, Phil.	1919 1918 1918	314·4	31	9·8	2	1,090	26,000	35	4 4-in., 1 3-in. A.A.	4 triple 21-in.	122	286
Hamilton Ward Kennison Kilty ‡Boggs	Mare Island, N.Y.	1919 1918 1919 1918 1918	314·4	21	9·5	2	1,090	24,200	35	4 4-in., 1 3-in. A.A.	4 triple 21-in.	122	286
Babbitt Badger Tattnall	New York S.B. Co.	1919	314·4	31	9·8	2	1,090	26,000	35	4 4-in., 1 3-in. A.A.	4 triple 21-in.	122	286
‡Lamberton	Newport News S. Co.	1918	314·4	31	9·8	..	1,090	25,000	35	4 4-in., 1 3-in. A.A.	4 triple 21-in.	122	286
Lea Dorsey Dent Waters Talbot Rathburne	Cramp, Pa.	1918 1918 1918 1918 1918 1919	314·4	31	9·8	..	1,090	26,000	35	4 4-in., 1 3-in. A.A. (Rathburne) has 3 4-in.)	4 triple 21-in.	122	286
Crane Chew Schley	Union Plant.	1919 1918	314·4	31	9·8	..	1,060	27,000	35	4 4-in., 1 3-in. A.A.	4 triple 21-in.	122	283
§McKean	Union, I.W.	1918	314·4	31	9·9	..	1,060	27,000	35	4 4-in., 1 3-in. A.A.	4 triple 21-in.	122	286
§Stringham	Fore River S.B. Co.	1918	314·4	31	9·8	..	1,060	27,000	35	4 4-in. 1 3-in. A.A.	4 triple 21-in.	122	283
§Manley	Bath, I.W.	1917	315·5	30·7	9·5	..	1,020	20,000	32	3 4-in. 1 3-in. A.A.	12 21-in.	122	260
Allen	Bath, I.W.	1917	315·3	29·9	9·8	..	920	17,500	30	4 4-in. 1 3-in. A.A.	4 triple 21-in.	122	290
DESTROYERS NOW FITTED AS MINELAYERS—													
Preble Pruitt Sicard	Bath Iron-works	1920 1920	314·4	30·5	9	2	1,160	27,000	35	4 4-in. 1 3-in. A.A. 92 mines	—	107	375
Tracy Ramsay Gamble Breese Montgomery	Cramp Newport News S. Co.	1920 1919	314·4	30·5	9	2	1,160	25,000	35	4 4-in. 1 3-in. A.A. 92 mines	—	120	286

† Minesweepers. ‡ Equipped as targets, wireless controlled. § Destroyer transports.

A new class of ship, the destroyer escort, is being produced in large numbers. By September 1, 1943, 364 keels had been laid and 253 ships launched. The first ship was delivered in February, 1943. More than 1 ship a day is now being commissioned.

United States—*continued.*

Name or Number.	Where built.	Completed.	Dimensions. Length. (Extreme.)	Dimensions. Beam.	Dimensions. Draught.	Number of Screws.	Displacement. Surface. Submerged.	Horse-Power.	Maximum Speed. Surface. Submerged.	Armament.	Torpedo Tubes.	Complement.	Fuel. Oil.
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
SUBMARINES—													
Angler	Electric Boat Co.	Bldg.	..	..	..	..	1,526 —	6,500 —	21 —	..	10 21-in.	..	..
Bashaw													
Bluegill													
Bream													
Cavalla													
Cobia													
Croaker													
Dace													
Flasher													
Flier													
Flounder													
Gabilan													
Gunnel													
Gurnard													
Haddo													
Hake													
Harder													
Hoe													
Jack													
Lapon													
Mingo													
Muskallonge													
Paddle													
Pargo													
Hammerhead	Manitowoc S.B. Co.												
Peto													
Pogy													
Pompon													
Puffer													
Rasher													
Raton													
Ray													
Redfin													
Rabalo													
Rock													
Sawfish	Navy Yard, Portsmouth												
Scamp													
Scorpion													
Snook													
Steelhead													
Sunfish	Navy Yard, Mare Island												
Tunny													
Tinosa													
Tullibee													
Gar	Electric Boat Co.	1941-1942	298 W.L.	27	13·2	2	1,475 —	..	17 8	..	10 21-in.	..	..
Grayback													
Grayling	Portsmouth Navy Yard.												
Gudgeon	Mare Island Navy Yard.												
Gato	Electric Boat Co.												
Greenling													
Grouper													
Growler													
Guardfish													
Drum	Portsmouth Navy Yard.	Bldg.*	307	27	..	2	1,526 —	6,500 —	21 —	1 3-in.	10 21-in.	..	..
Flying Fish													
Finback													
Haddock													
Halibut													
Silversides	Mare Island Navy Yard.												
Trigger													
Wahoo													
Whale													
Albacore	Electric Boat Co.												
Barb													
Blackfish													
Bluefish													
Bonefish													
Cod													
Cero													
Corvina													
Darter													

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* Some of these vessels completed in 1942, and 120 more are ordered.

United States—*continued.*

Name or Number.	Where built.	Completed.	Dimensions. Length. (Extreme.)	Dimensions. Beam.	Dimensions. Draught.	Number of Screws.	Displacement. Surface. / Submerged.	Horse-Power.	Maximum Speed. Surface. / Submerged.	Armament.	Torpedo Tubes.	Complement.	Fuel Oil.
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
SUBMARINES—*continued.*													
Herring .. Kingfish .. Shad	Portsmouth Navy Yard.	1942	307	27	..	2	1,526 / —	6,500 / —	21 / —	1 3-in.	10 21-in.	..	..
Mackerel .. Marlin ..	Electric Boat Co. Portsmouth Navy Yard.	1941 1942	..	..	..	..	800 / —	..	..	..	6 21-in.	..	..
Permit .. Plunger .. Pollack .. Pompano ..	Electric Boat Co. Portsmouth Navy Yard. Mare Island Navy Yard.	1936–1937	300½	25	13·8	2	1,330 / 1,998	..	17 / 8	1 3-in.	6 21-in.	54	..
Tambor .. Tautog .. Thresher ..	Electric Boat Co.	1940 1940	298 W.L.	27	13·3	2	1,475 / —	..	..	1 3-in.	10 21-in.	..	..
Trout .. Tuna	Mare Island Navy Yard.	1941 1941											
Salmor .. Seal .. .. Skipjack ..	Electric Boat Co.	1939	298 W.L.	26	14½	2	1,450 / —	..	17 / 8	1 3-in.	6 21-in.	55	..
Snapper .. Stringray ..	Portsmouth Navy Yard.	1938											
Sturgeon ..	Mare Island Navy Yard.												
Sargo .. Saury .. Spearfish ..	Electric Boat Co.	1939											
Sculpin .. Sailfish (*ex*-Squalus)	Portsmouth Navy Yard.	1940											
Swordfish ..	Mare Island Navy Yard.	1939											
Sea Dragon ..	Electrical Boat Co.	1939											
Sea Raven .. Seawolf ..	Portsmouth Navy Yard.	1939 1939											
Porpoise .. Pike	Portsmouth Navy Yard.	1936	283	24·9	13	2	1,310 / 1,934	5,000	21	1 3-in.	6 21-in.	55	..
Tarpon ..	Electric Boat Co.	1936	298	25·1	13·9	2	1,315	5,000	21	1 3-in.	6 21-in.	54	..
Dolphin	Portsmouth Navy Yard.	1932	319	27·8	13	2	1,540 / 2,215	4,250 / 875	17 / 8	1 4-in., 1 M.	6 21-in.	58	..
Cachalot .. Cuttlefish ..	Portsmouth Navy Yard. Electric Boat Co.	1934	271¾	24·8	13	2	1,110 / 1,650	3,100 / 800	17 / 8	1 3-in. A.A., 1 M.	6 21-in.	45	..
Narwhal .. Nautilus ..	Portsmouth Navy Yard. Mare Island Navy Yard.	1930	371	33·3	16	2	2,730 / 3,960	5,450 / 1,270	17 / 8·5	2 6-in.	6 21-in.	88	185
Bonita .. Bass .. .. Barracuda ..	Portsmouth Navy Yard.	1926 1925 1924	341·5	27	14·6	2	2,000 / 2,506	6,700 / 1,200	19 / 8	1 3-in. A.A., 2 M.	6 21-in.	87	160
S48	Lake T.B. Co., Bridgeport.	1922	267	21·8	13·5	2	1,000 / 1,458	2,000 / 1,500	14·8 / 11·0	1 4-in.	5 21-in.	38	237
S47* .. S46* .. S45* .. S44* .. S43* .. S42* ..	Bethlehem Shipbuilding Corp., Quincy Plant.	1925 1925 1925 1925 1924 1924	225·3	20·5	16	2	850 / 1,126	1,200 / 1,500	14 / 10·4	1 4-in.	4 21-in.	44	154
S41* .. S40* .. S39* .. S38* .. S37* .. S35* .. S34* .. S33* .. S32* .. S31* .. S30* ..	Bethlehem Shipbuilding Corp., Union Plant.	1924 1923 1923 1923 1923 1923 1923 1923 1923 1923 1920	219·3	20·5	16	2	800 / 1,062	1,200 / 1,500	14·5 / 11	1 4-in.	4 21 -ni	42	140

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* Designed by Electric Boat Co., Groton, Conn.

United States—*continued.*

Name or Number.	Where built.	Completed.	Dimensions. Length. (Extreme).	Dimensions. Beam.	Dimensions. Draught.	Number of Screws.	Displacement. Surface. / Submerged.	Horse-Power.	Maximum Speed. Surface. / Submerged.	Armament.	Torpedo Tubes.	Complement.	Fuel Oil.
			Feet.	Feet.	Feet.		Tons.		Knots.				Tons.
SUBMARINES—*continued.*													
S28*	Bethlehem Shipbuilding Corp., Quincy Plant.	1923	219·3	20·5	16	2	800 / 1,062	1,200 / 1,500	14·5 / 11	1 4-in.	4 21-in.	42	140
S23*		1923											
S20*		1922											
S18*		1923											
S17	Lake T.B. Co., Bridgeport.	1921	231	21·5	13	2	790 / 1,092	2,000 / 1,200	15·25 / 9	1 4-in.	4 21-in.	38	123
S16		1920											
S15		1921											
S14		1921											
S13	Portsmouth Navy Yard.	1923	231	21·8	13	2	790 / 1,092	2,000 / 1,200	14·75 / 9	1 4-in.	5 21-in.	38	123
S12		1923											
S11		1923											
R20*	Union, I.W.	1918	186·1	17·5	14·5	2	530 / 680	880 / 934	13·5 / 10·5	1 3-in.	4 21-in.	30	63
R18*													
R16*													
R15*													
R14*	Fore River S.B. Co.	1919											
R13*													
R11*													
R10*													
R9*													
R7*	Fore River S.B. Co.	1919	186·1	17·5	14·5	2	530 / 680	880 / 934	13·5 / 10·5	1 3-in.	4 21-in.	30	63
R6*													
R5*													
R4*													
R2*													
R1*													
O10*	Fore River S.B. Co.	1918	172·3	17·5	14·4	2	480 / 624	880 / 740	14 / 10·5	1 3-in.	4 21-in.	30	73
O8*													
O7*													
O6*													
O4*													
O3*													
O2*													

* Designed by Electric Boat Co., Groton, Conn.

The machinery contractors for the vessels of the E. B. Co. Design built in yards other than the Navy Yards were the New London Ship and Eng. Co., Groton, Conn., and the hulls were built under sub-contract from the E. B. Co.

SHIP-BORNE AIRCRAFT

SHIP-BORNE AIRCRAFT—BRITISH.

Name.	Type.	Dimensions				Weight.		Engine.					Performance.						Armament
		Span.	Length.	Height.	Wing Area	Empty.	Loaded.	Name.	Type.	B.H.P. at Speed at Ht.			Speed at Ht.		Service Ceiling.	Range.		Initial Climb.	
		ft. in.	ft. in.	ft. in.	sq. ft.	lb.	lb.			B.H.P.	R.P.M.	ft.	M.P.H.	ft.		Miles.	Speed at M.P.H.	Ft./ min.	
Hawker Sea Hurricane	Single-engine single-seat fighter.	40 0	32 3	13 1½	258	..	6,780	Rolls-Royce Merlin II or III.	12-cyl. V liquid-cooled in-line.	1,030	..	16,250	302	16,400	31,000	..	..	..	..
Vought Sikorsky Corsair.	Single-engine single-seat fighter	40 3	31 6	..	..	..	9,146	Pratt and Whitney Double Wasp.	Radial	2,000	..	..	385	..	..	1,700	..	..	6 ·5-inch M.Gs.
Grumman Hellcat.	Single-engine single-seat fighter.	42 10	33 7	..	..	..	..	Pratt and Whitney or Wright.	Radial. Double row	2,000	..	..	..	..	..	..	..	..	..
Fairey Swordfish.	Single-engine 2/3-seat torpedo-spotter reconnaissance biplane. (wheels or floats).	45 6	Land 35 8 Sea 40 6	Land 12 4 Sea 14 7	..	Land 4,700 Sea 5,300	Land 6,750 Sea 7,360	Bristol Pegasus 30	..	750	..	4,750	Land 144 Sea 134	5,000	19,250	720	131	1,120	Bombs, a torpedo or mine. 1 fixed Vickers gun firing through air screw arc and Lewis gun in rear cockpit.

Fairey Albacore I.	Single-engine 2/3-seat torpedo-spotter reconnaissance biplane (wheels or floats)	50 0	Land 39 10 Sea 42 5	Land 14 9 Sea 17 9	623	7,250	10,460	Bristol Taurus XII.	14-cyl. sleeve-valve air-cooled radial.	1,130	..	3,500	161	4,500	..	..	..	..	2 Vickers ·303 M.Gs. free. 1 Browning fixed. 1 torpedo.
Vickers-Armstrongs Walrus II.	Single-engine fleet spotter. Amphibian.	45 10	37 7	15 3	610	4,900	7,200	Bristol Pegasus VI.	9-cyl. air-cooled radial.	..	..	..	124 135	Sea level 4,750	18,500	600	..	1,150	2 M.Gs.
Vickers-Armstrongs Seafire.	Single-engine single-seat fighter.	36 10	29 11	11 5	242	..	6,300	Rolls-Royce Merlin 45.	12-cyl. V liquid-cooled in-line.	1,150	..	17,000	369	19,500	..	..	..	..	2 20-mm. cannon and 4 ·303-in. Browning M.Gs.
Vickers-Armstrongs Seafire II.	Single-engine single-seat fighter.	36 10	31 0¼	..	..	..	6,600	Rolls-Royce Merlin LXI.	12 cyl. V liquid-cooled in line.	..	..	..	..	..	..	..	..	..	2 20-mm. cannon. 4 ·303 Browning M.gs.
Grumman Avenger.	Single-engine 3-seat torpedo monoplane.	53 0	37 0	..	..	..	12,000	Wright Cyclone 14.	Double row radial air-cooled.	1,600	..	..	270	7,500	..	..	..	..	2 free ·5-inch Browning M.Gs. 1 fixed. 1 22-in. torpedo.
Vought Sikorsky Kingfisher.	Single engine 2-seat obs. scout (wheels or single float).	35 11	33 7	14 8	261·8	3,335	4,980	Pratt & Whitney Wasp Junior.	Radial.	400	..	5,000	171	5,000	18,200	908	152	..	2 ·30 machine guns. 2 100-lb. bombs.
Curtiss-Wright Seamew.	Single-engine 2-seat obs. scout (wheels or floats).	38 0	Sea 36 10 Land 34 2	Sea 15 0 Land 11 5	290	..	5,730	Ranger V–770–6.	12 cyl. inverted V air-cooled.	520	..	..	190	..	..	..	..	..	..
Fairey Barracuda	Single engine 3-seat torpedo monoplane.	..	..	..	..	..	..	Rolls-Royce Merlin XXXII.	12-cyl. liquid-cooled in line.	..	..	..	..	..	..	..	..	..	..

SHIP-BORNE AIRCRAFT—UNITED STATES OF AMERICA.

Name.	Type.	Dimensions.				Weight.		Engine.					Performance.						Armament.
		Span.	Length.	Height.	Wing Area.	Empty.	Loaded.	Name.	Type.	B.H.P. at Speed at Ht.			Speed at Ht.		Service Ceiling.	Range.		Initial Climb.	
		ft. in.	ft. in.	ft. in.	sq. ft.	lb.	lb.			B.H.P.	R.P.M.	ft.	M.P.H.	ft.		Miles at	Speed, M.P.H.	Ft./min.	
Grumman Avenger. TBF-1.	Single-engine.	53 0 app.	37 0 app.	..	..	..	..	Wright Double Cyclone.	Air-cooled radial.	1,600	..	..	280	..	Above 20,000	1,400	..	..	1 21-in. torpedo or a 2,000-lb. bomb load.
Grumman Wildcat. F4F-4.	Single-engine single-seat fighter.	38 0	28 10	9 2½	260	4,649	5,876	Wright Cyclone R-1820 G-205A.	Air-cooled radial.	1,000	..	13,500	325	13,500	28,000	1,150	..	3,300	6 ·50-in. M.Gs.
Douglas Dauntless. SBD-3.	Single-engine 2-seat scout-bomber.	41 6	31 8	13 1	323·8	5,406	8,157	Wright Cyclone R-1820-32.	9-cyl. air-cooled radial.	950	..	..	275	7,500	28,000	1,000	..	1,780	Not fully released, but 2 ·50-in. M.Gs. firing forward. 1 500-lb. bomb and smaller ones.
Brewster Buccaneer. SB2A-2.	Single-engine 2-seat scout dive-bomber.	47 0	39 6	15 3	..	7,490	12,256	Wright Double Row Cyclone GR-2600	Radial.	1,600	..	..	284	12,000	23,000	695	..	2,500	4 ·5-in. guns in wings and 2 in fuselage. 2 ·3-in. swivelling guns on fuselage. 2 500-lb. and 1 1,000-lb. bomb.

Grumman Hellcat. F6F.	Single-engine single-seat fighter.	42 10	33 7	..	..	..	..	**Pratt & Whitney or Wright**	**Double row radial.**	**2,000**	..	..	..	..	..	..	..	..	..
Vought-Sikorsky Corsair. F4U–2.	Single-engine single-seat fighter.	41 0	35 4	..	..	..	10,000	Pratt & Whitney Double Wasp.	Double row radial.	2,000	..	..	385	..	..	..	..	..	6 ·5-inch machine guns.
Curtiss Seagull. SO3C–1.	Single-engine 2-seat obs. scout (wheels or floats).	38 0	**Sea** 36 11 **Land** 34 2	**Sea** 15 0 **Land** 11 5	..	4,284	5,729	Ranger V–770–6.	12-cyl. inverted V air-cooled.	520	..	..	..	..	..	..	..	..	..
Curtiss Helldiver. SB2C–1.	Single-engine 2-seat dive-bomber.	40 8	3 72	..	422	7,868	10,982	Wright Double-Row "Cyclone 14" GR –2600–B5.	14-cyl. air-cooled radial	1,750	..	..	..	..	..	..	..	..	Internal bomb stowage.
Douglas Devastator. TBD–1	8-seat torpedo-bomber.	50 0	35 6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1 ·303-in. in top cowling firing through air-screw arc. 1 ·5-in M.G. in rear cockpit, movable. Carries 1 torpedo or A.P. bomb.
Vought-Sikorsky Kingfisher OS2U–3.	Single-engine float monoplane.	35 11	33 7	14 8	261·8	3,335	4,980	Pratt & Whitney Wasp Junior.	Radial.	400	..	5,000	171	5,000	18,200	908	152	..	2 ·30 machine guns. 2 100 lb. bombs

NAVAL AIRCRAFT—GERMANY AND JAPAN.

Name.	Type.	Dimensions.				Weight.		Engine.					Performance.						Armament.
		Span.	Length.	Height.	Wing Area.	Empty.	Loaded.	Name.	Type.	B.H.P. at Speed at Ht.			Speed at Ht.		Service Ceiling.	Range.		Initial Climb.	
		ft. in.	ft. in.	ft. in.	sq. ft.	lb.	lb.			B.H.P.	R.P.M.	ft.	M.P.H.	ft.		Miles at	Speed M.P.H.	Ft./ min.	
Mitsubishi S -00. Navy 00–1 ZEKE.	Single-engine single-seat fighter-bomber.	39 5	28 5	9 0	256	..	5,140	Mitsubishi Kinsei. MK–44	14-cyl. air-cooled radial.	1,050	..	..	345	10,000	36,000	1,600	160	..	2 20-mm. cannon in wings and 2 7·7-mm. M.Gs. in motor cowling. 1 500-lb. bomb.
Mitsubishi Navy 00–2 HAMP.	Single-engine single-seater fighter.-bomber.	36 6	28 5	9 0	..	..	5,100	Mitsubishi Kinsei. MK–44	14-cyl. air-cooled radial.	1,050	..	..	345	..	..	1,600	160	..	2 20-mm. cannon in wings, 2 7·7-mm. M.Gs.in motor cowling. 1 500-lb. bomb.
Aichi K–99.	Single-engine 2-seat dive-bomber.	47 8	34 9	..	..	..	..	Mitsubishi Kinsei MK–44	14-cyl. air-cooled radial.	1,050	..	..	245	..	..	874	..	..	2 fixedfor ward M.Gs. and 1 or 2 swivelling rear guns. 800 lbs. of bombs.
Mitsubishi G–97–1.	Single-engine 2 or 3-seat torpedo bomber.	50 9	33 11	..	..	..	8,500	Mitsubishi Kinsei 4C.	14-cyl. air-cooled radial.	900	..	..	195	10,000	23,000	470	..	..	1 7·7-mm. M.G. fixed forward 1 or 2 swivelling 7·7-mm. M.Gs. in back position. Carries750 lb. of bombs or a torpedo.

Nakajima G-96.	Single-engine 3-seater torpedo bomber.	49 0	33 0	..	..	..	7,300	Nakajima Kotobuki.	9-cyl. air-radial.	600	..	8,000	168	8,000	20,000	420 with torpedo, 900 with bombs.	..	..	1 7·7-mm. M.G in back cockpit. 900 lb. o. bombs or a 1,760-lb. torpedo.
Mitsubishi K96.	Single-engine 2-seat dive-bomber.	37 6	30 7	..	..	..	5,200	Mitsubishi Kinsei.	9-cyl. air-cooled radial.	730	..	..	200	10,000	23,000	..	..	..	2 fixed forward 7·7-mm.M.Gs. and 1 rear swivelling 7·7-mm. M.G.
Nakajima 8KT-97.	Single-engine 2-seat fighter reconnaissance sea-plane.	36 0	33 6	..	..	..	5,300	Nakajima 93.	Air-cooled radial.	750	..	..	220	3,120	27,000	325	..	..	2 fixed forward firing and 2 swivelling rear 7·7-mm. M.Gs.
Arado Ar-196.	Single-engine 2-seat reconnaissance sea-plane.	40 10½	36 1	14 6	306	6,580	8,200	B.M.W. 132K.	Air-cooled radial.	900	..	..	193	13,120	23,000	670	158	980	2 forward fixed cannon, 2 forward fired M.Gs. and one moveable rear M.G. Bombs can be carried under the wings.
Heinkel He-114.	Single-engine 2-seat reconnaissance sea-plane.	44 6	39 0	..	455	5,148	7,656	B.M.W. 132 K.	Air-cooled radial.	900	..	..	208	11,550	22,960	540	..	..	1 forward fixed M.G. and 1 moveable rear.
Nakajima Kate 97-3.	Single engine 2/3-seat torpedo.	52 5	33 9	..	..	..	..	Nakajima Hikari	Radial.	..	..	..	225	8,000	..	600	..	..	2 7·7-mm.M.Gs. 1 or 2free 77s. 1 1,760 lb. torpedo.

NAVAL AIRCRAFT—GERMANY AND JAPAN—*continued.*

Name.	Type.	Dimensions.				Weight.		Engine.					Performance.						Armament.
		Span.	Length.	Height.	Wing Area.	Empty.	Loaded.	Name.	Type.	B.H.P. at Speed at Ht.			Speed at Ht.		Service Ceiling.	Range.		Initial Climb.	
		ft. in.	ft. in.	ft. in.	sq. ft.	.bl	lb.			B.H.P.	R.P.M.	ft.	M.P.H.	ft.		Miles at	Speed M.P.H.	Ft./ min.	
Mitsubishi 96.	Twin engine 5-seat torpedo.	82 2	54 0	..	800	..	22,000	Kinsei IV.	14-cyl. radial.	1,000	..	10,000	205	7,000	24,000	600	**160**	—	**3 7·7-mm. free. 120-mm. free. 1 torpedo.**
Mitsubishi 01.	Twin-engine 5-seat torpedo...	79 8	64 0	..	..	..	..	Kinsei.	14-cyl. radial.	1,000	..	11,500	275	11,500	..	600	..	..	**4 7·7-mm. free. 1 20-mm. free. 1 torpedo.**
Kawanishi 97.	Single-engine seaplane torpedo.	46 6	38 0	..	680	..	8,000	Kawanishi	12-cyl. V liquid cooled.	650	..	7,000	155	7,000	..	450	**135**	..	**2 fixed 7·7-M.Gs. 1 free 7·7-M.G. 1 torpedo.**
Sasebo 00. PETE	Single-engine 2-seat biplane float plane.	37 0	34 6	..	..	..	..	Mitsubishi Kinsei.	Radial.	750	..	..	200	5,000	..	225	..	..	**4 fixed7·7-M.Gs. 1 free 7·7 M.G.**
Mitsubishi O2·RUFE	Single-engine single-seater float-plane fighter.	39 5	33 9	..	..	..	..	Mitsubishi Kinsei.	Radial.	1,050	..	..	265	..	..	..		..	..

REFERENCE SECTION.

MISCELLANEOUS.

DIARY OF NAVAL EVENTS IN 1943.

NOTE—*The dates given in this Diary are taken from accounts, both official and unofficial, which have been published in the Press. Dates derived from the latter cannot at present be guaranteed as accurate.*

JANUARY.

1.—Loss of H.M. destroyer Blean announced.

2.—British submarine sank two supply ships off Gulf of Tunis and probably sank destroyer off Bizerta.

4.—Loss of H.M. corvette Snapdragon announced. Destruction of blockade runner in Atlantic announced.

5.—Loss of H.M. destroyer Firedrake announced. British trawler sank Italian submarine Emo off North Africa. Sinking of German blockade-runner in Bay of Biscay by H.M. Cruiser Scylla announced.

6.—British submarines' successes announced; troopship sunk off Sicily, supply ship probably destroyed off Gulf of Naples, railway viaduct near Palermo bombarded, German supply ship off Italian coast probably sunk; large steamship sunk in Ægean; harbour installations in Greek port of Kumi bombarded. Allied aircraft attacked Japanese convoy off New Guinea; 3 transports sunk, 3 damaged; 113 Japanese aircraft destroyed or damaged.

9.—Allied aircraft sank Japanese cruiser off Gasmata (New Guinea).

10.—Loss of H.M. submarine Utmost announced. Russians announced German transport sunk in Barents Sea.

11.—Russians announced enemy transport sunk in Black Sea. R.A.F. raided Naples.

13.—Award of V.C. to Captain Sherbrooke, and loss of H.M. corvette Marigold announced. Italians admitted loss of 2 torpedo-boats.

14.—R.A.F. attacked Lorient.

15.—R.A.F. attacked Lorient and docks at Cherbourg. Loss of H.M. destroyer Partridge announced. British submarine successes in Mediterranean announced; 3 supply ships destroyed.

16.—Allied aircraft raided Rabaul, 5 Japanese ships destroyed or damaged. British light naval forces sank supply ships south of Gabes and off Tripoli.

17.—Loss of H.M. trawlers Horatio and Jura announced. British destroyers sank supply ship in Mediterranean.

18.—R.A.F. hit 3 ships off Dutch coast. British submarine successes announced; 2 supply ships sunk off Sardinia, others attacked in Gulf of Genoa, and goods train shelled near Paolo.

19.—Destruction of 13 enemy ships in Mediterranean announced. Italian U-boat sunk off Tripoli, tugs hit, harbour works attacked by British light naval forces. German supply ship and trawler sunk off Holland.

20.—British naval aircraft sank supply ship in Ægean.

21.—Loss of H.M. minesweeper Bramble announced. Sinking by U.S.

warships of 5 U-boats in South Atlantic announced. British submarines destroyed or damaged 15 supply ships, 1 small naval vessel, in Mediterranean announced. Scuttling of Atlantic raider announced.

22.—Brazilian aircraft sank U-boat announced.

23.—British light naval forces bombarded Zuara (west of Tripoli). R.A.F. raided Lorient. U.S.A.A.F. raided Lorient and Brest. British E-boat activity off Norway reported by Germans.

24.—Loss of H.M. submarine Traveller announced. U.S.A.A.F. attacked Palermo and Zuara.

25.—Russians announced sinking of German destroyer in Barents Sea. Loss of U.S. coastguard ship Natsek announced. Sinking of U-boat in Mediterranean by H.M.C.S. Ville de Quebec and of 5 ships by British submarines announced.

26.—R.A.F. raided Lorient and Bordeaux.

27.—Loss of H.M. trawler Kingston Jacinth announced. R.A.F. attacked Copenhagen shipyards. U.S.A.A.F. attacked Wilhelmshaven. Allied aircraft attacked 2 destroyers in Mediterranean.

28.—R.A.F. attacked Lorient. Russians report German transport sunk in Barents Sea.

29.—R.A.F. raided Lorient, sank large ship off Norway, and bombed railway viaduct at Morlaix. New Zealand corvettes sank Japanese submarine in South Pacific. U.S. naval and air units engaged Japanese withdrawing from Guadalcanal; battle continued until February 4: 2 destroyers sunk, 4 probably sunk, 6 damaged, 30 other vessels damaged, 60 aircraft destroyed; U.S. cruiser Chicago, 1 destroyer, 3 subsidiary vessels, 22 aircraft lost.

30.—R.A.F. raided Hamburg. Tripoli harbour reopened to shipping.

31.—U.S.A.A.F. attack on enemy convoy in Mediterranean announced. Zuara occupied by Eighth Army.

FEBRUARY.

1.—Loss of H.M. submarine P.222, probable sinking of enemy destroyer off Pantelleria, loss of H.Nor.M.S. Bodo announced. Russians report sinking of German transport in Barents Sea.

3.—R.A.F. raided Hamburg.

4.—R.A.F. raided Spezia and Lorient. Further British submarine successes in Mediterranean announced; 9 supply ships and 1 anti-submarine vessel sunk. Russians report sinking of transport in Barents Sea.

7.—R.A.F. raided Lorient. Allied aircraft hit three ships at Naples. Canadian corvettes sank 2 submarines in Mediterranean.

8.—Bombardment of railway bridge near Cotrone and sinking of 4 ships by British submarines announced.

9.—Sinking of 4 vessels in Tyrrhenian Sea by H.M. submarine P.211 announced.

11.—Loss of H.M. submarine P.48 announced. R.A.F. raided Wilhelmshaven.

13.—R.A.F. raided Lorient.

14.—R.A.F. raided Spezia.

15.—Arrival of Richelieu, Montcalm and other French warships at U.S. ports, and of attack on Axis convoy by British motor torpedo-boats announced. Russians report sinking of 6 German transports and 1 patrol vessel in Barents Sea.

16.—R.A.F. raided Lorient and St. Nazaire. Sinking of H.M.C. corvette Louisburg in Mediterranean announced. Russians report sinking of 2 transports in Barents Sea.

17.—Loss of H.M. trawler Stronsay announced. Sinking of 6 supply ships by British submarines and of Italian submarine by Dutch submarine, in Mediterranean, announced.

18.—R.A.F. raided Wilhelmshaven.

19.—R.A.F. raided Wilshelmshaven.

20.—Allied aircraft atacked convoy in Central Mediterranean; 2 vessels hit.

21.—Loss of U.S. submarine Argonaut announced. R.A.F. destroyed Axis tanker in Sicilian narrows and raided Bremen.

22.—Sea-borne raid by Allied forces from India on Myebon, south of Akyab, sinking of 2 U.S. liners by submarines in North Atlantic, destruction of 2 supply ships, tanker probably destroyed in Mediterranean, and damage to supply ship, warship, and 2 escort vessels by Allied aircraft off Sicily announced.

23.—Loss of H.M. corvette Samphire announced.

24.—R.A.F. raided Wilhelmshaven, and attacked convoy north of Trapani; supply ship sunk.

26.—Dunkirk raided 4 times, day raid on Wilhelmshaven, tanker sunk in Bay of Biscay by aircraft and H.M.S. Sussex.

27.—R.A.F. raided Dunkirk. U.S.A.A.F. raided Brest. Loss of H.M. trawlers Bredon and Tervani announced.

28.—R.A.F. raided St. Nazaire.

MARCH.

1.—Loss of H.M. corvette Erica announced.

2.—Air attack on Japanese convoy in Bismarck Straits; 10 warships, 12 transports sunk; 102 aircraft destroyed or damaged.

3.—R.A.F. raided Hamburg. Russians report sinking of German transport in Barents Sea.

4.—Sinking of 7 supply ships by British submarines in Mediterranean announced.

5.—R.A.F. sank 2 E-boats off Dutch coast.

6.—U.S.A.A.F. and R.A.F. raided Brest and Lorient. Loss of H.M. minelayer Welshman announced.

7.—Russians report sinking of transport in Barents Sea.

8.—Loss of H.M. trawler Lord Hailsham announced. British light naval forces sank E-boat off East coast.

9.—Loss of H.M.C. corvette Weyburn announced. Announced that German ships at Goa set on fire by crews. British light naval forces set tanker on fire off Dutch coast.

10.—Fighting French naval unit successfully attacked convoy in English Channel.

11.—Loss of H.M. submarine P.311 announced. British light naval forces torpedoed supply ship in English Channel.

12.—Italians admitted loss of submarine.

13.—Japanese convoy for Wewak attacked; 2 vessels hit, 2 more on 14th.

14.—Norwegian naval forces sank 2 ships in Floroe harbour. Sinking of

Italian submarine in Mediterranean by H.M.C. corvette Regina announced.

15.—Allied aircraft attacked Japanese troopships on way to Aru islands. Japanese A.F. raided Darwin. U.S.A.A.F. raided Kiska and Naples. Loss of Norwegian minesweeper Harstad and probable sinking by Greek destroyer of U-boat in Atlantic announced.

16.—British light naval forces sank 2 supply ships in North Sea. Sinking of 4 Japanese ships announced in Washington.

17.—R.A.F. from Malta attacked convoy, large tanker hit. Attack on 6 U-boats by U.S. coastguard cutter Campbell announced.

18.—Loss of auxiliary vessel H.M.S. Fidelity announced. U.S.A.A.F. bombed Vegesack U-boat yards. Russians report sinking of transport in Barents Sea.

19.—Sinking of 8 ships by British submarines in Mediterranean announced.

20.—R.A.F. hit destroyer near Malta.

22.—Allied aircraft set troopship on fire, hit supply ship and escort vessel between Sicily and Tunis. R.A.F. raided St. Nazaire. Allied aircraft attacked Japanese convoy off Dutch New Guinea. Loss of H.M. destroyer Lightning and recent visit of H.M. King George to Home Fleet announced.

23.—Russians report sinking of transport in Barents Sea. Enemy convoy intercepted off Terschelling, 3 ships hit.

25.—Presumed loss of Norwegian submarine Uredd announced. R.N.A.S. sank R-boat near Boulogne. U.S.A.A.F. raided Kiska 6 times.

26.—U.S. warships turned back Japanese force on way to Aleutians.

27.—Loss of H.M. trawler Moravia announced.

28.—British light coastal forces destroyed 1 patrol craft, damaged 1 off Dutch coast. R.A.F. raided Rotterdam and St. Nazaire.

29.—Allied aircraft attacked Japanese convoy on way to New Guinea; destroyer hit. British light naval forces attacked E-boats off East coast, 1 rammed, others damaged.

30.—Russians report sinking of transport in Black Sea.

31.—U.S.A.A.F. raided Rotterdam. Further British submarine successes in Mediterranean announced; 8 ships sunk, others damaged.

April.

1.—Russians report sinking of transport in Barents Sea.

2.—R.A.F. raided Lorient and St. Nazaire. Air attack on enemy convoy in Mediterranean announced; 1 ship sunk, several set on fire.

4.—R.A.F. raided Kiel. U.S.A.A.F. raided Naples; again on 6th, 11th, 12th, 15th, 24th, 28th.

5.—Loss of H.M. submarine Tigris announced. U.S.A.A.F. raided Antwerp.

7.—Japanese aircraft attacked U.S. shipping off Guadalcanal, losing 39 planes; 3 U.S. ships sunk.

9.—Loss of H.M. destroyer Harvester announced.

10.—U.S.A.A.F. raided Sardinia; Italian cruiser Trieste sunk, Gorizia hit. 30 enemy transport planes destroyed over Sicilian narrows. Russian A.F. raided Königsberg, again on 12th.

11.—21 enemy transport planes destroyed over Sicilian narrows. 23 Japanese planes destroyed in attack on shipping in Oro Bay.

12.—37 Japanese aircraft damaged or destroyed in attack on Port Moresby. Allied aircraft attacked Japanese shipping in Hansa Bay.
13.—Loss (in 1942) of H.M. depot ship Medway announced. R.A.F. raided Spezia (again on 18th). U.S.A.A.F. raided Kiska 10 times (again on 14th: 8 times; 18th: 9 times, again on 30th).
14.—Kerkennabo Islands (off Tunisian coast) occupied by troops from Malta. Heavy Japanese raid on Milne Bay. Russian A.F. raided Königsberg and Danzig.
15.—Allied aircraft attacked Japanese convoy off Wewak. British destroyers sank 2 Italian destroyers off Sicily.
16.—U.S.A.A.F. and R.A.F. raided Brest.
17.—U.S.A.A.F. bombed Focke-Wulf works at Bremen.
18.—58 enemy transport planes destroyed off Cape Bon.
20.—R.A.F. raided Stettin and Rostock.
23.—31 enemy transport gliders, 10 fighters, shot down off Tunisia. Loss of H.M. submarine Thunderbolt announced.
24.—U.S. warship bombarded Japanese positions in Aleutians. Allied aircraft raided Naples.
28.—Loss of Norwegian destroyer Eskdale announced. Russian A.F. raided Königsberg.

MAY.

1.—U.S.A.A.F. raided St. Nazaire.
2.—New Japanese submarine offensive east of Australia announced. Japanese aircraft raided Darwin, losing 4 aircraft; 21 Spitfires lost owing to bad weather.
3.—Loss of H.M. destroyer Beverley announced.
4.—Sinking of 4 Japanese ships and 2 destroyers in Pacific and loss of H.M. submarine Turbulent announced. U.S.A.A.F. raided Antwerp.
6.—Loss of H.M. submarine Sahib announced. R.A.F. raided Reggio di Calabria, by U.S.A.A.F. on following day.
7.—Tunis and Bizerta captured. Loss of 7 Allied ships east of Australia announced.
9.—U.S.A.A.F. raided Palermo.
10.—Loss of H.M. destroyer Pakenham announced.
11.—U.S. forces landed on Attu Island (Aleutians).
12.—Allied aircraft raided Naples.
13.—Axis forces in Tunisia surrendered. Naval bombardment of Pantellaria.
14.—Japanese sank Australian hospital ship Centaur. U.S.A.A.F. raided Kiel and Antwerp.
15.—U.S.A.A.F. raided Emden.
16.—Loss of H.M. submarine Splendid announced. U.S.A.A.F. raided Lorient and Bordeaux.
17.—Scuttling of Axis supply ships Regensburg and Silvaplana announced.
19.—U.S.A.A.F. raided Kiel and Flensburg. Allied air force raided Pantelleria.
21.—Destruction of many Axis ships by mines in Mediterranean announced. U.S.A.A.F. raided Bremen, Emden and Wilhelmshaven.
23.—Destruction of 313 Axis ships, excluding U-boats and ships sunk by mines, in Mediterranean, since Alamein announced.
28.—U.S.A.A.F. raided Leghorn.

29.—Loss of H.M. submarine Regent announced. U.S.A.A.F. raided La Pallice and St. Nazaire.
30.—U.S.A.A.F. raided Naples. Sinking of 5 U-boats by R.A.F. announced. Naval bombardment of Pantellaria.
31.—Announced that French Fleet at Alexandria had joined Allies.

JUNE.

1.—British warships bombarded Pantellaria (again on 2nd, 3rd, 5th, 8th, 10th); bombed from air (again on 3rd, 4th, 5th, 6th, 7th, 8th, 9th, 10th). Naples raided (again on 16th, 20th, 21st, 25th).
2.—May announced as record for U-boat destruction.
5.—U.S.A.A.F. raided Spezia.
6.—U.S.A.A.F. raided San Giovanni (again on 19th, 20th, 21st, 27th), Messina (again on 7th, 13th, 18th, 25th, 28th, 29th), and Reggio di Calabria (again on 19th, 20th, 21st, 28th).
7.—Reconnaissance force landed on Lampedusa Island.
9.—Allied aircraft raided Rabaul (again on 12th, 13th, 15th, 19th, 26th).
11.—Pantellaria surrendered. U.S.A.A.F. raided Wilhelmshaven and Cuxhaven. R.A.F. raided Zeebrugge.
12.—Lampedusa surrendered.
13.—Linosa Island (north-east of Lampedusa) surrendered. Loss of U.S. submarines Amberjack and Grampus announced. U.S.A.A.F. raided Kiel and Bremen.
20.—H.M. King George VI. visited Malta. Sinking of 2 U-boats during 5 day battle in Atlantic announced.
22.—R.A.F. sank 5 escort ships and 1 supply ship in English Channel.
23.—U.S.A.A.F. raided Macassar (Celebes). R.A.F. raided Spezia.
24.—U.S.A.A.F. raided Channel ports. Russians report sinking of 2 German patrol vessels, 1 transport, in Barents Sea. British submarines' successes announced; armed merchant cruiser, 2 naval auxiliaries, 10 supply ships sunk; 2 Italian destroyers attacked north of Sicily, and radiolocation station on Salina Island bombarded.
25.—U.S.A.A.F. raided Messina. Sinking of Axis submarine near Rio de Janeiro by Brazilian A.F. announced.
26.—Russians report sinking of German coastguard vessel in Gulf of Finland.
27.—R.A.F. sank U-boat in Bay of Biscay and damaged escorts and supply ships in English Channel.
28.—U.S.A.A.F. raided Leghorn. Polish submarine sank enemy merchant ship in Straits of Messina. U.S. announced sinking of 1 minelayer, 1 destroyer, 1 large transport, 4 supply ships, 1 schooner in Pacific and Far Eastern waters by U.S. warships.
30.—U.S forces landed on Rendova Island (Solomons); U.S. transport McCawley sunk. Russians report sinking of 2 German transports. Announced that R.A.F. and U.S.A.A.F. had formed complete air umbrella over Straits of Sicily.

JULY.

1.—U.S. Naval units capture of Viru Harbour (New Georgia Island) and sinking by British submarines of 1 transport, 3 supply ships in Italian waters announced.

2.—7 Japanese warships attempting to shell U.S. positions on Rendova driven off. U.S. forces landed on Vanganu Island.

3.—R.A.F. raided Hamburg. Arrival of Atlantic convoy without loss announced. Allied warships bombarded Munda airfield.

4.—U.S.A.A.F. raided La Pallice. Allied naval force sank 8 Japanese warships north of New Georgia; U.S. cruiser Helena and destroyer Strong sunk. British land forces raided airfields in Crete and withdrew safely.

5.—U.S. warships bombard Kiska (again on 20th, 22nd, 30th).

8.—U.S. submarines' successes announced; 2 transports, 5 cargo ships, 2 tankers sunk, others damaged, in New Georgia waters.

10.—Allied landing in Sicily.

11.—British troops occupied Syracuse.

12.—Augusta surrendered to 2 destroyers. Ragusa captured by U.S. and Canadian troops. Japanese light cruiser and 3 destroyers sunk, 2 probably sunk, in Kula Gulf.

13.—U.S. destroyer Gwin lost in Kula Gulf. U.S. forces captured Naro.

14.—Allied aircraft raided Naples (again on 15th, 16th, 17th, 20th).

17.—1 Japanese light cruiser, 1 submarine-chaser, 1 tanker, 2 cargo ships sunk between Buin and Faisi. 2 Japanese destroyers probably sunk west of Kolombangara Island. U.S.A.A.F. raided Naples. British warships bombarded Catania.

18.—Enemy cruiser (8,000 tons) torpedoed in Straits of Messina.

19.—U.S.A.A.F. bombed Japanese naval base in Kurile Island (north of Japan). Allied aircraft attacked Japanese convoy west of Kolombangara; 1 cruiser, 2 destroyers sunk, 1 destroyer probably sunk, 1 transport, 4 destroyers damaged.

22.—U.S. forces captured Palermo.

23.—12 Japanese barges sunk, 13 damaged, in Huon Gulf.

24.—U.S.A.A.F. bombed U-boat base at Tronheim. R.A.F. raided Hamburg (heaviest raid to date). British warships bombarded Catania and probably destroyed 2 convoyed steamers off Dutch coast.

25.—U.S.A.A.F. raided Hamburg, Kiel and Warnemünde. R.A.F. raided Hamburg (again, by day and night on 26th, and nights of 28th, 29th).

26.—U.S.A.A.F. raided Wilhelmshaven.

27.—R.A.F. attacked 2 R-boats off Cherbourg. British submarines shelled Greek islands. U.S.A.A.F. bombed shipping at Samrah Bay, Hainan and Hong-Kong.

28.—Allied aircraft destroyed 2 Japanese destroyers, 1 transport, off Cape Gloucester.

29.—U.S.A.A.F. raided Kiel and Warnemünde. Loss of H.M. submarine P.615 announced. U.S. submarines' successes announced; 2 large Japanese transports, 6 cargo ships, 2 tankers sunk.

31.—Coast road near Taormina, Vibo Valentia, Marina and Crotone bombarded from sea.

AUGUST.

1.—British navy bombarded Crotone.

2.—R.A.F. raided Hamburg.

3.—Successful action (lasting 3 days) against 25–30 U-boats in Atlantic announced. Transfer of 150 U.S. merchant ships to U.K. for war period announced.

4.—U.S. naval units supported American advance on north coast of Sicily. British warships bombarded Taormina. R.A.F. bombed Le Trait shipyards.

5.—British forces captured Catania. Sweden cancelled traffic agreement with Germany.

6.—Capture of Munda by Allied forces announced. Japanese cruiser and 2 destroyers sunk off Kolombangara.

7.—R.A.F. raided Genoa. British warships bombarded Taormina.

9.—Castellamare di Strabia (Gulf of Naples) and Cape Vaticano shelled from sea.

12.—Loss of H.M. trawler Red Gauntlet announced. U.S.A.A.F. raided Japanese bases in Kurile Islands.

14.—Scalea (Gulf of Policastro) bombarded by Allied warships.

15.—U.S. and Canadian forces occupied Kiska (Aleutians). U.S. forces occupied Vella Lavella (Solomons). Loss of U.S. submarine Pickerel, destroyer Maddox, and 4 other naval vessels announced.

16.—Allied aircraft attacked Wewak airfields; 215 Japanese aircraft destroyed by 18th for loss of 6; 3 cargo ships set on fire, many barges sunk.

17.—U.S. naval forces occupied Lipari Islands. Allied warships intercepted Japanese troop barges with naval escort in Vella Gulf; 2 destroyers, many barges sunk. Sinking of 9 vessels off Italy by British submarines announced. Resistance in Sicily ended.

18.—U.S. warships bombarded Gulf of Gioia (Italy); again on 19th.

23.—Finschafen (New Guinea) bombarded from sea.

24.—Locri (South Italy) bombarded from sea. Announced that French cruisers Le Terrible and Le Fantasque in operation with Allies.

25.—Hansa Bay heavily bombed; 1 cargo ship sunk, 45 barges sunk or badly damaged. U.S.A.A.F. raided Hong-Kong.

26.—Polish submarine's attack on tanker and passenger ship in Adriatic announced.

27.—U.S.A.A.F. raided Hong-Kong.

28.—Organised resistance in New Georgia ended.

29.—Loss of H.M. submarines Saracen and Parthian announced.

31.—British warships bombarded batteries north of Reggio and in Cape Pellaro area. Sinking of Italian liner Conti di Savoia in Mediterranean announced. U.S.A.A.F. raided Hong-Kong.

SEPTEMBER.

1.—U.S.A.A.F. raided Marcus Island.

3.—Italian armistice signed. Loss of H.M. sloop Egret announced. Eighth Army landed on Calabrian coast.

4.—Allied forces landed east of Lae in New Guinea.

5.—Straits of Messina open to navigation.

6.—Destruction of 6 U-boats in Bay of Biscay announced.

8.—Italy surrendered. Spitzbergen bombarded by German naval force. U.S. and Canadian forces landed at Salerno, Eighth Army near Pizzo. Sinking of 6 Japanese cargo ships, damage to 4, by U.S. submarines announced.

9.—Allied forces landed near Naples. Italian fleet left Spezia, Roma sunk by German aircraft. Loss of H.M. destroyer Puckeridge announced. Amphibious exercises carried out in English Channel without interference.

10.—Italian fleet reached Malta. Announced that since August 17 British submarines had sunk 7 supply ships, 4 warships or naval auxiliaries, 6 small craft, mostly in South Adriatic.

13.—Further Italian warships reached Malta. U.S. air attack on Paramushir Island area announced, damaging 5 ships. British warships bombarded Salerno area.

14.—French troops landed in Corsica. Salamua (New Guinea) captured by Allies. Loss of U.S. submarine Grenadier announced.

16.—Lae captured by Australian forces. U.S.A.A.F. raided La Pallice. Arrival of 28 additional Italian ships at Palermo, and 2 battleships, 4 cruisers, 4 destroyers at Alexandria from Malta announced.

17.—16 Italian submarines arrived at Malta.

19.—Evacuation of Sardinia by Germans announced. British landings on Dodecanese Islands announced. Convoy in North Atlantic attacked for 4 days and nights by U-boats; H.M. corvette Polyanthus, frigate Itchen and H.M.C.S. St. Croix lost. 6 small Italian naval units arrived Haifa, submarine in Durban harbour.

21.—Valona harbour attacked by M.T.Bs.

22.—Tirpitz attacked by midget submarines in Alten Fjord. Allied landing 6 miles north of Finschafen.

24.—Forty aircraft destroyed in Japanese attempt on warships near Finschafen.

25.—E-boat sunk off East Coast.

26.—U.S. forces landed on Mono Island (Solomons). Large enemy supply ship sunk off French coast. Allied aircraft sank 4 small supply ships, 1 Siebel ferry, 2 landing craft, off Bastia.

27.—Germans landed at Corfu. U.S.A.A.F. raided Emden. Allied aircraft attacked Wewak (New Guinea), sinking 7 ships and destroying 64 planes.

29.—Full armistice terms signed by Italy.

30.—Allied aircraft sank Japanese destroyer, 2 merchant ships, in Bougainville Strait.

OCTOBER.

1.—Naples occupied by Allied forces.

2.—Finschafen occupied by A.I.F. Japanese warships off Kolombangara attacked from air; gunboat, 40 barges sunk at Vila; destroyer hit in Buka area. U.S.A.A.F. raided Emden.

3.—Cos attacked by Germans. Landing at Termoli by Eighth Army. Sinking of Japanese submarine by New Zealand corvette Tui announced.

4.—Corsica liberated. British fleet, with U.S. vessels, in action off Norway; 8 merchant ships hit. Light naval forces in English Channel set on fire 2 destroyers, damaged others. Sinking of 6 Japanese submarines during September announced.

5.—U.S. warships attacked Wake Island. Loss of Greek submarine Katsonis, and sinking of transport and 2 barges by Dutch submarine Dolfin announced.

6.—Loss of H.M. trawler Meror announced. Allied warships sank Japanese light cruiser, 2 destroyers, in Vella Gulf; U.S. destroyer Chevalier lost. U.S. made landings at Vila. British destroyers bombarded targets N.W. of Termoli.

7.—Polish submarine sank 2 merchant ships at Bastia, and sinking of Japanese liner Konron Maru in Tsushima Strait announced.

8.—U.S.A.A.F. raided Bremen, R.A.F. at night. Loss of Greek destroyer Queen Olga and destruction of German convoy in Ægean by light naval forces announced.

9.—U.S.A.A.F. raided Danzig and Gdynia. Loss of H.M. destroyer Intrepid announced.

12.—Agreement with Portugal for use of Azores announced. 3 Japanese destroyers, over 100 smaller craft, sunk or destroyed at Rabaul during heavy air attack. Allied warships captured Cherso Island (Adriatic).

13.—Italy declared war on Germany. Loss of U.S. destroyers Buck and Bristol, and H.M. minelayer Abdiel announced.

14.—Light naval craft sank two Axis vessels near Elba. Loss of Polish destroyer Orkan announced.

18.—U.S. P.T. boats destroyed ammunition ship off Elba. Rabaul heavily raided. Attempted Japanese landing at Finschafen repulsed.

19.—Norwegian light coastal forces sank vessel in Norwegian leads.

21.—Loss of H.M. destroyer Panther announced.

23.—R.A.F. damaged 3 German destroyers off St. Maes. H.M. cruiser Charybdis and destroyer Limbourne sunk. Concentrated air attack on Japanese at Rabaul; again on 24th, 25th, 30th.

24.—Loss of U.S. submarine Dorado announced. Light naval forces in action off Norway; 1 British vessel damaged, later sunk by own forces. 4 E-boats sunk, 7 damaged, during attack on convoy in English Channel.

25.—Rabaul heavily raided; 123 Japanese aircraft destroyed, 1 destroyer 5 coastal craft sunk. E-boat attack on Bay of Naples driven off.

26.—U.S. forces landed on Mono and Stirling Islands, south-west of Shortlands. E-boats off Bastia driven off.

27.—U.S. warships bombarded Minturno area. Loss of U.S. submarine Runner announced.

29.—U.S. submarines sank 10 Japanese ships, damaged 4, in Pacific announced.

30.—Further air attack on Japanese at Rabaul. During this and following days 3 destroyers, 8 cargo ships sunk, others badly damaged. Minturno Island again shelled.

NOVEMBER.

1.—Allied force landed on Bougainville Island; 2 Japanese cruisers, 4 destroyers sunk, others hit. U.S.A.A.F. raided Port Blair (Andamans). Loss of H.M. trawler William Stephen announced. German held cruiser Ottaviano Augusto bombed in Ancona harbour.

2.—British destroyers bombarded port of Durazzo.

3.—U.S.A.A.F. raided Wilhelmshaven. E-boat attack on convoy in English Channel driven off. Two armed trawlers, 1 supply ship, 2 E-boats damaged off Dutch coast. First V.C. for air war on U-boats announced. Rabaul heavily raided; 3 Japanese destroyers, 8 mer chant ships sunk; 6 heavy, 2 light cruisers damaged. Destroyers bombarded positions N. of San Salvo (Adriatic).

4.—U.S. submarines sank 10 Japanese cargo ships, damaged 3, announced.

6.—Further attack on Rabaul announced. Japanese landed reinforcements on Empress Augusta Bay, Bougainville Island.

7.—U.S. destroyer Beattie sunk.

8.—Japanese corvette and 5 small supply ships sunk from air near Buka.

10.—U.S. warships sank 2 enemy submarines in Atlantic. Loss of U.S. destroyers Henley, Chevalier, Borie, and Russian M.T.B.'s action with German warships off Kerch peninsula announced. Japanese destroyer sunk from air off Kavieng. Japanese cruiser, 2 destroyers sunk, 1 cruiser and 11 destroyers probably sunk, 88 aircraft destroyed by allied carrier-borne aircraft attacking Rabaul.

12.—Loss of H.M. destroyer Eclipse announced. Germans landed on Leros Island.

14.—U.S. submarines sank 7 Japanese ships, damaged 2 in Pacific and Far Eastern waters. R.A.A.F. raided Rabaul, 8,000 ton transport sunk. U.S. naval aircraft hit 9,000 ton vessel between New Britain and New Ireland.

15.—U.S.A.A.F. raided Hong-Kong; again on 16th.

17.—Loss of H.M. minesweeper Cromarty and trawler Orfassy announced. U.S. warships bombarded Japanese air bases on Buka Island.

18.—British commando raid on Symi (Dodecanese), and loss of H.M. submarine Usurper announced.

19.—British destroyers attacked convoy off east coast of Italy. Announced that French battleship Richelieu again in service.

20.—U.S. landings in Gilbert Islands.

21.—Light coastal forces sank lighter near Leghorn.

22.—Makin Island (Gilberts) captured by Allied forces.

23.—Allied evacuation of Samos announced. U.S. marines captured Betio Island (Gilberts). British destroyers bombarded enemy positions in Gulf of Gaeta. R.A.F. torpedoed large tanker, 2 escort vessels damaged off Dutch coast.

24.—U.S.A.A.F. attacked Toulon sinking 5 naval ships. U.S. escort carrier Liscombe Bay lost off Gilbert Islands.

25.—U.S. warships sank 5 Japanese destroyers off Bougainville. British destroyers bombarded Civitanuova (Adriatic); cruiser and destroyers bombarded Minturno.

26.—U.S.A.A.F. raided Bremen. Allied aircraft frustrated air attack on Mediterranean convoy. Polish submarine Sokol's success in Ægean, loss of H.M. submarine Trooper, and sinking of 9 ships in Pacific by U.S. submarines announced.

27.—Allied aircraft attacked Rangoon; again on 28th.

29.—U.S.A.A.F. raided Bremen. Allied light naval force bombarded Sio harbour (New Guinea). Sinking of Japanese cruiser off New Ireland and damage to 2 cruisers north of New Britain by Allied aircraft announced.

30.—Durazzo bombarded from sea.

DECEMBER.

1.—Loss of H.M. minesweeper Hythe and destroyer Hunworth announced. Minturno area (Italy) shelled from sea. U.S. naval aircraft sank

Japanese transport, hit 2 destroyers and tanker south-east of Kavieng.

2.—U.S.A.A.F. attacked Marseilles harbour and submarine pens. Loss of U.S. submarine Wahoo announced.

3.—U.S. warships bombardment of Tarawa announced.

4.—Loss of H.M. destroyer Hurworth announced. U.S. carrier task forces attacked Japanese bases in Marshall Islands, sinking 2 light cruisers, 4 ships.

5.—Sinking by R.A.F. and U.S.A.A.F. of 6 U-boats in Atlantic after 8-day attack on convoys announced.

6.—Sinking of 2 supply ships, 14 smaller ships, large floating dock, in Ægean by Allied submarines announced. Handing over of 1 British destroyer and 4 corvettes to Greek Navy announced.

7.—R.C.A.F. attacked coastal ship and escort off Norway.

8.—U.S. warships attacked Nauru Island.

9.—Loss of H.M. destroyer Dulverton announced.

10.—British light coastal forces torpedoed supply ship off Holland.

11.—Loss of H.M. minesweeper Hebe, and sinking of 5 U-boats, damage to 3 in Atlantic announced.

13.—R.A.F. from Azores sank U-boat announced. U.S.A.A.F. attacked Kiel and Wilhelmshaven.

15.—U.S. forces landed at Cape Marcus (New Britain).

18.—U.S. patrol boats attacked 2 destroyers off Elba. British light forces sank a Siebel ferry, 1 escort ship, 2 motor craft, in Adriatic. R.A.F. torpedoed supply ship off west coast of France. H.M.S. Duncan and R.A.F. sank 2 U-boats announced.

20.—Sinking of U-boat in Bay of Biscay by R.A.F., and loss of H.M. trawler Rysa announced.

21.—British m.t.bs. destroyed Dalmatia, a small ex-Yugoslav cruiser off Sieba Island. U.S. merchant vessel sunk by U-boat in Gulf of Mexico.

23.—Loss of H.M. whaler Santa Ann announced. British destroyers bombarded Drvenik on Dalmatian coast.

26.—British warships sank Scharnhorst off North Cape. Dutch submarine attacked German convoy off Norway. Allied forces landed at Cape Gloucester (New Britain), 1 U.S. destroyer sunk.

27.—R.A.F. attacked escort vessel off Norway and sank German blockade-runner in Bay of Biscay.

28.—R.C.A.F. damaged merchant ship and escort off Norway. U.S. submarines sank 12 Japanese vessels, including 1 destroyer, 2 tankers, in Pacific announced. British warships sank 3 German destroyers in Bay of Biscay.

29.—Polish submarine Sokol sank 6 supply ships in Mediterranean announced.

31.—Loss of H.M. trawler Adventurine announced.

BRITISH AND FOREIGN NAVIES.

PRINCIPAL OFFICIALS.

On January 1, 1944.

GREAT BRITAIN.

Board of Admiralty.

First Lord.—The Right Honourable A. V. Alexander, C.H., M.P.
First Sea Lord and Chief of Naval Staff.—Admiral of the Fleet Sir A. B. Cunningham, Bart., G.C.B., D.S.O.
Deputy First Sea Lord.—Admiral Sir Charles E. Kennedy-Purvis, K.C.B.
Second Sea Lord and Chief of Naval Personnel.—Vice-Admiral Sir William J. Whitworth, K.C.B., D.S.O.
Third Sea Lord and Controller.—Vice-Admiral Sir W. F. Wake-Walker, K.C.B., C.B.E.
Fourth Sea Lord and Chief of Supplies and Transport.—Vice-Admiral F. H. Pegram, C.B., D.S.O.
Fifth Sea Lord and Chief of Naval Air Equipment.—Rear-Admiral D. W. Boyd, C.B., C.B.E., D.S.C.
Vice-Chief of Naval Staff.—Vice-Admiral Sir Henry R. Moore, K.C.B., C.V.O., D.S.O.
Assistant Chiefs of Naval Staff.—Rear-Admiral Wilfrid R. Patterson, C.B., C.V.O.
Rear-Admiral J. H. Edlesten, C.B.E.
Financial Secretary.—James P. L. Thomas.
Parliamentary Secretary.—Lord Bruntisfield, M.C.
Civil Lord.—Captain R. A. Pilkington, M.C., M.P.
Controller of Merchant Shipbuilding and Repairs.—Sir James Lithgow, Bart., M.C., T.D.
Permanent Secretary.—Sir Henry V. Markham, K.C.B., M.C.

FOREIGN POWERS.

Country.	Minister of Marine.	Chief of Staff.
Argentina . .	Vice-Admiral Benito Sueryo	Rear-Admiral Abelardo Pantin
Brazil . . .	Vice-Admiral Henrique Aristides Guilhem	Vice-Admiral Vieira de Mello
Chile . . .	Gen. Oscar Escudero O.	Vice-Admiral Vicente Merino B. (C.-in-C. Ashore)
China . . .	Admiral Chen Shao-Kwang (C.-in-C. Naval Forces)	Vice-Admiral Chen Sun-Ying
Colombia . .	Dr. Gonzalo Restrepo (Minister for War)	—
Cuba . . .	—	Commodore Mario Rodriguez Malpica
Denmark . .	Vice-Admiral H. Bechnitzer (Chief of Naval Defence and Director of the Naval Ministry)	Commodore C. Hammerich
Ecuador . .	—	—
Finland . .	General Rudolf Wallden (Minister of Defence)	Rear-Admiral Lundmann
France (Vichy) .	Vice-Admiral H. P. H. Blehaut	Rear-Admiral Seguin
„ (N. Africa)	Rear-Admiral A. G. Lemonnier	Rear-Admiral Auboyneau
Germany . .	Adolf Hitler (Supreme Commander of the Armed Forces)	General-Admiral Doenitz (Commander-in-Chief of the Navy)
Greece . . .	Socrates Venizelos	Admiral C. Alexandris (C.-in-C. Fleet)
Hungary . .	Rear-Admiral O. R. Wulff (Inspector General)	—
Italy . . .	Rear-Admiral Emilio Ferrari (Secretary-General of Navy)	Rear-Admiral R. de Courten
Japan . . .	Admiral Shimada	Admiral Nagano
Mexico . . .	General Cardenas	—
Netherlands .	Vice-Admiral J. T. Furstner (Minister of Naval Affairs)	Rear-Admiral J. W. Termijtelen
Norway . . .	Oscar Torp (Minister of Defence)	Rear-Admiral E. Corneliussen (C.-in-C.)
Paraguay . .	—	—
Peru . . .	Rear-Admiral Fedirgo Diaz Dulanto	Capt. L. M. McNair, U.S.N.
Poland . . .	Vice-Admiral J. Swirski (Chief of Polish Navy)	Capt. T. P. Morganstern
Portugal. . .	Captain Manuel Ortins De Bettencourt	Rear-Admiral Alvredo Botelho de Sousa (Major-General of Armada) Rear-Admiral Sousa Ventura (Chief of Naval Staff)
Rumania . .	—	Rear-Admiral I. Georgescu
Soviet Union .	Admiral Kuznetsoff (People's Commissar)	Admiral Isakov
Spain . . .	Vice-Admiral S. Moreno Fernandez	Vice-Admiral A. Arriaga Adam, Rear-Admiral Ozamiz Lastra (C.-in-C. Naval Forces afloat, Flag in Canarias)
Sweden . . .	T. E. Skold (Secretary of State for Swedish Defence Forces)	Rear-Admiral Stromback
Thailand . .	Luang Pibul Songkram (Prime Minister)	Rear-Admiral Luang Sindhu Songgkram Jai
Turkey . . .	Admiral H. Gomdalay (Under Secretary of the Minister of National Defence)	Admiral Suku Okan (C.-in-C.)
United States .	Colonel Knox (Secretary of the Navy)	Admiral E. J. King, C.-in-C. (Chief of Naval Operations)
Uruguay . .	General Alfredo Campos (Minister of Nat. Defence)	—
Venezuela . .	Colonel Manuel Moran (Minister of War and Marine)	—
Yugoslavia . .	—. Puritch (Prime Minister)	Captain Ivan Kern

BRITISH AND FOREIGN NAVAL ATTACHÉS.

On January 1, 1944.

BRITISH NAVAL ATTACHÉS ACCREDITED TO FOREIGN COUNTRIES.

To.	Name.	Appointed.	Headquarters.
Argentine	Captain H. A. Forster, M.V.O., R.N.	June, 1942	Buenos Aires
	Assistant, Pay-Commander Lloyd-Hirst, R.N.	April, 1940	,,
Uruguay	Commander S. H. Smiles, O.B.E., R.D., R.N.R.	Dec., 1942	Montevideo
Brazil	Captain R. A. Wilson, D.S.O., R.N.	Jan., 1941	Rio de Janeiro
	Assistant, Commander C H. Pullen, R.N.V.R.	Oct., 1939	,,
Venezuela, Colombia .	Captain H. Boyes, C.M.G., C.I.E., R.N.	Dec., 1942	Caracas
Chile, Peru, Ecuador .	Captain A. C. W. Domvile, R.N.	May, 1940	Santiago
	Assistant, Commander F. V. Vaughan, R.N.V.R.	Aug., 1939	,,
Portugal	Captain H. D. Owen, R.N.	Oct., 1938	Lisbon
	Assistant, Commander E. W. Billyard-Leake, D.S.O., R.N.	May, 1942	,,
	Assistant, Lieutenant J. A. C. Hugill, R.N.V.R.	May, 1942	,,
Spain	Captain G. M. Bradley, R.N.	Sept., 1943	Madrid
	Assistant, Commander S. A. Gomez-Bears, R.N.V.R.	Nov., 1940	,,
	Assistant, Lieutenant S. Arlington, R.N.V.R.	May, 1942	,,
Sweden	Captain H. M. Denham, R.N.	May, 1940	Stockholm
	Assistant, Lieutenant H. D. G. Harris, R.N.V.R.	Nov., 1941	,,
Turkey	Rear-Admiral W. L. Jackson, D.S.O.	Jan., 1942	Ankara
	Assistant, Commander G. R. Scott, R.N.	Dec., 1943	Istanbul
	Assistant, Commander V. Wolfson, R.N.V.R.	April, 1940	,,
	Assistant, Commander F. H. G. Oliphant, R.N.	Aug., 1941	Ankara
U.S.A., Panama, Cuba, Mexico, Guatemala, Honduras, Nicaragua, Costa Rica and Salvador.	Rear-Admiral H. Pott, M.V.O	June, 1940	Washington
	Assistant, Commander (E.) L. E. Rebbeck, R.N.	Feb., 1943	,,
	Assistant, and Naval Attaché for Air, Captain C. John, R.N.	Aug., 1943	,,
(Above countries except Panama and Cuba).	Assistant, Lieutenant P. H. B. Otway-Smithers, R.N.V.R.	Nov., 1940	Mexico City

FOREIGN NAVAL ATTACHÉS ACCREDITED TO GREAT BRITAIN.

Argentine : Captain Ricardo Lopez Campo.
Belgium : Lieutenant-Colonel of the Military Aviation, L. F. E. Wouters, C.B.E., M.C.
Brazil : Post vacant.
Chile : Captain Senor Don Alejandro Gallegos.
China : Captain Chow Ying-tsung.
Denmark : Captain Preben Lembcke (also Air Attaché).
France : Rear-Admiral G. Thierry d'Argenlieu (Flag Officer Commanding French Naval Forces in Great Britain and Head of Naval Mission).
Greece : Commander D. Zepos, R.H.N.
Mexico : Senor Teniente de Fragata Alfredo Marquez Ricano.
Netherlands : Commander C. Moolenburgh, D.S.O. (Acting Naval Attaché).
Norway : Captain J. E. Jacobsen, R. Nor. N., O.B.E.

Peru : Post vacant.
Poland : Commander Tadeusz Stoklasa, Polish Navy, O.B.E.
Portugal : Post vacant.
Soviet Union : Colonel C. Stukalov (Acting Naval Attaché).
Spain : Commander Donmariano Urzaiz, Duke of Luna.
Sweden : Captain Count J. G. Oxenstierna, R.S.N.
Turkey : Captain Aziz Ulusan.
U.S.A. : Rear-Admiral George B. Wilson, U.S.N.
Uruguay : Post vacant.
Yugoslavia : General de Division Milorad M. Radovitch.

PICTORIAL SECTION

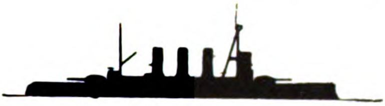
PICTORIAL SECTION

SILHOUETTES OF WARSHIPS

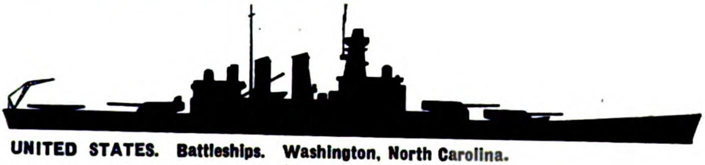
CAPITAL SHIPS.

[In order to facilitate identification, the ships are arranged in accordance **with the number of funnels and masts,** as these are the features most easily distinguished at a distance. Dimensions and particulars of British and foreign warships will be found on pp. 149–248. All the profiles are drawn to the scale $\frac{1}{2}$ in. = 100 ft.]

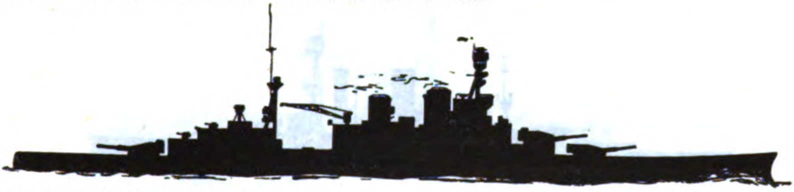
[An Index to the names of vessels of which profiles are included in this section are given at the end of the volume.]



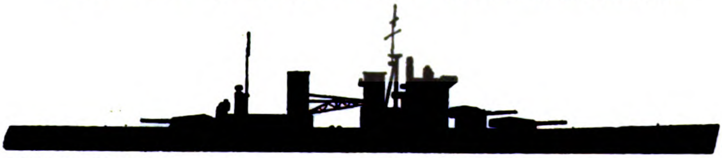
SWEDEN. Battleship. Oscar II.
(A searchlight is fitted on each mast.)



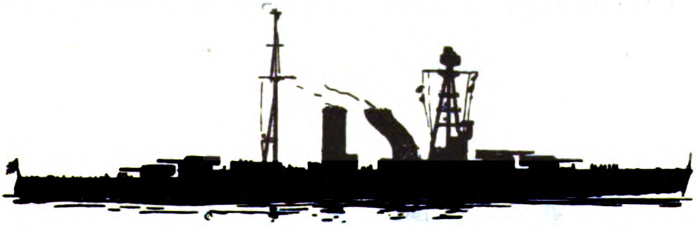
UNITED STATES. Battleships. Washington, North Carolina.



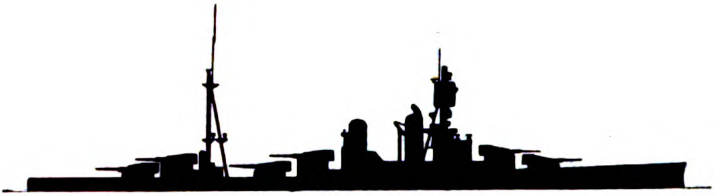
GREAT BRITAIN. Battle-cruiser. Renown.
Forward superstructure modified.
Fore topmast and topgallant mast fitted.
The after funnel is the same size as forward funnel.
Tripod mainmast replaced by polemast, and main topgallant mast removed.



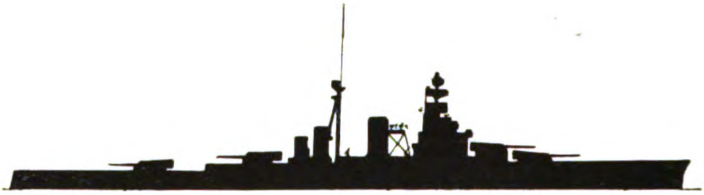
GREAT BRITAIN. Battleships. King George V., Duke of York, Howe, Anson.



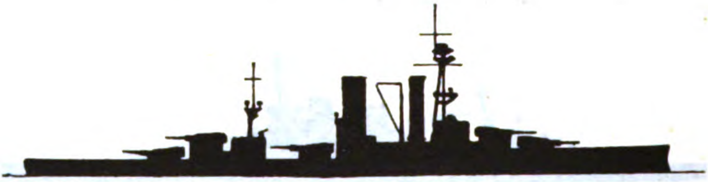
JAPAN. Battleships. Mutsu, Nagato.
Single funnel fitted and catapult added between mainmast and "X" turret.
Superstructure built round mainmast.
Bridgework modified.
Main topgallant mast removed.



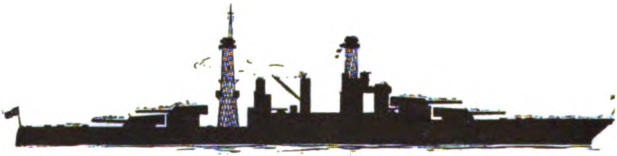
JAPAN. Battleships. Ise, Hyuga.
Fore funnel and topmast removed.
Bridgework modified.
Superstructure built round mainmast.
Main topgallant mast removed.



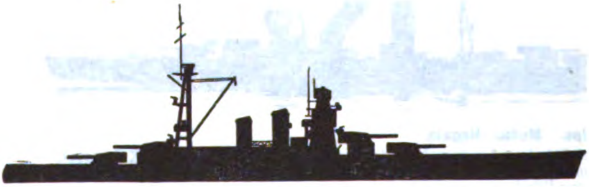
JAPAN. Battleships. Kirishima, Kongo.
Kongo has funnels of equal height.
Derricks fitted between X and Y turrets.



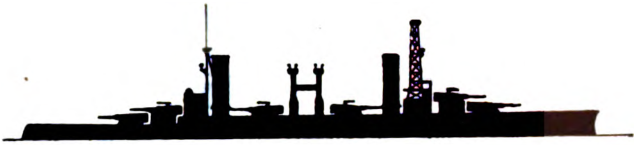
CHILE. Battleship. Almirante Latorre.
(Modernised 1931—mainmast raised and bridge work altered.)
Catapult fitted on quarter deck.



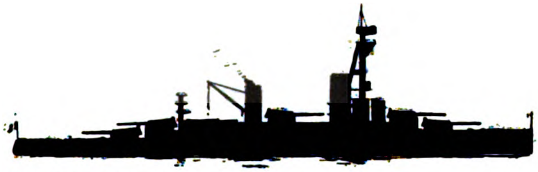
UNITED STATES. Battleships. California, Colorado, Maryland, Tennessee, West Virginia.
(Now fitted with 2 catapults, one on "X" turret and one on the quarter deck.)
Crane fitted at stern.
Maryland has range-finder fitted on B turret.



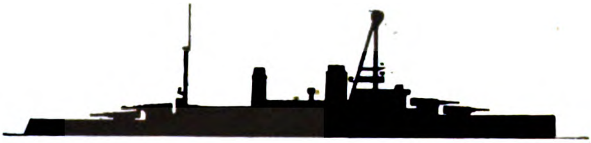
ITALY. Battleships. Conte di Cavour, Giulio Cesare, Andrea Doria, Caio Duilio.
Tripod mainmast removed in Doria.



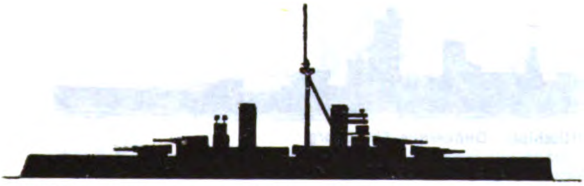
ARGENTINA. Battleships. Moreno, Rivadavia.
Guns on B and X turrets replaced by range-finders.



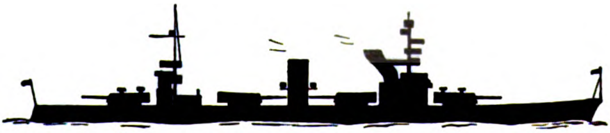
FRANCE. Battleships. Lorraine, Provence.
NOTE.—Lorraine has been modernised. The midships turret has been removed and replaced by a hangar and catapult. Cranes fitted abreast after funnel. Bridgework extended. Fore topmasts removed, main topmasts fitted.



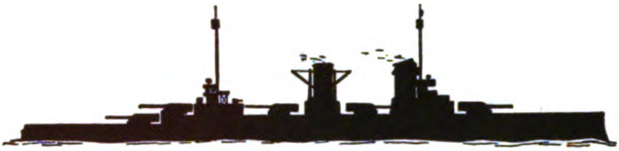
FRANCE. Battleships. Courbet, Paris (operated by the Free French).
Cranes fitted abreast after funnel.
After funnel reduced in height.
Range-finder fitted on B turret.



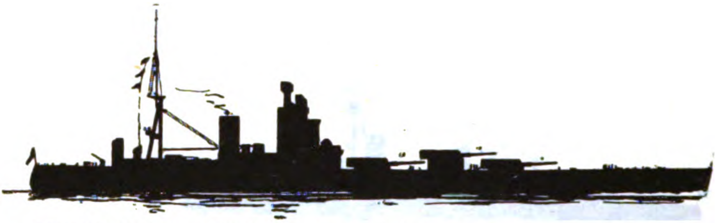
BRAZIL. Battleships. Minas Geraes, São Paulo.
Forward funnel removed and bridgework modified.
Remaining funnel made larger.
Polemast and range-finder fitted abaft funnel.



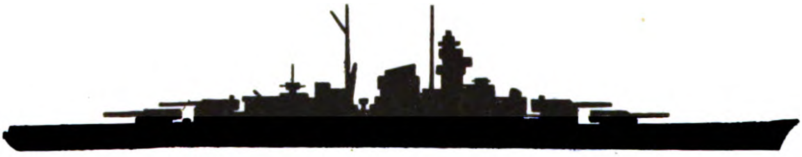
SOVIET UNION. Battleships. Marat, Paris Commune and October Revolution.
Two derricks fitted between mainmast and turret in Marat and Paris Commune.
Crane fitted abreast mainmast in October Revolution.



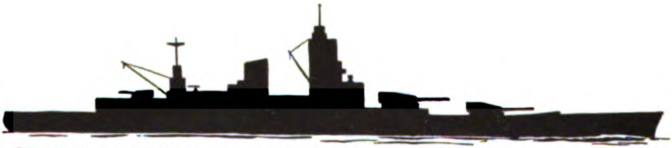
TURKEY. **Battle-cruiser.** **Yavouz Sultan Selim.**



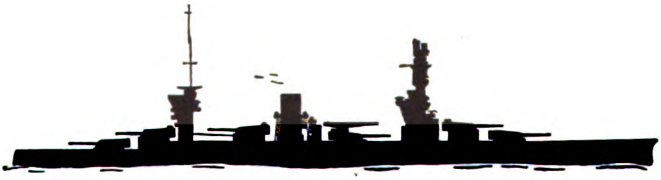
GREAT BRITAIN. **Battleships.** **Nelson, Rodney**
Nelson has a crane amidships.
Rodney has a catapult fitted on C turret.
Mast structure increased.



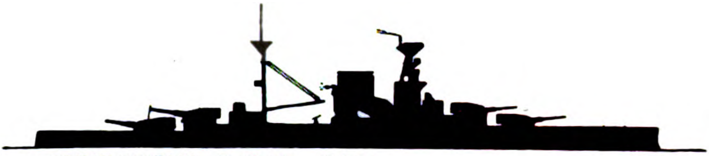
GERMANY. **Battleship.** **Tirpitz.**



FRANCE. **Battleships.** **Dunkerque, Strasbourg.**
Catapult fitted on quarter deck. Crane is moved aft to break of deck.
Main topgallant mast fitted.

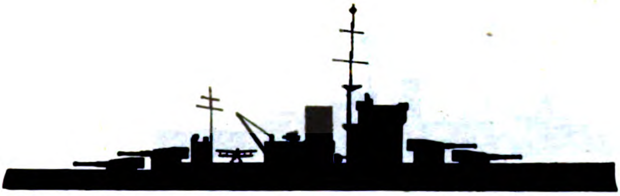


JAPAN. **Battleships.** **Fuzo and Yamashiro.**
(After reconstruction, 1934.)
A.A. guns fitted abreast mainmast.



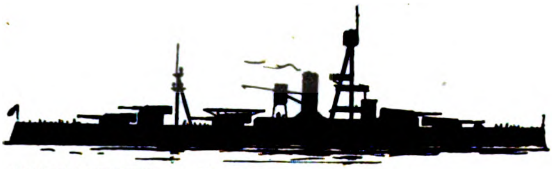
GREAT BRITAIN. Battleship. Malaya.

NOTE.—Catapult fitted before mainmast; Derrick on mainmast removed. Hangar and cranes fitted abreast funnel.



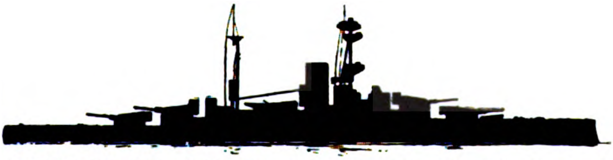
GREAT BRITAIN. Battleships. Warspite, Queen Elizabeth, Valiant.

Sternwalks fitted in Warspite and Queen Elizabeth.



UNITED STATES. Battleships. New York, Texas.

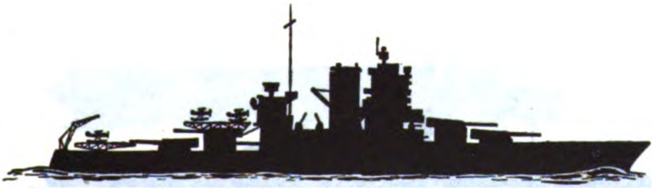
Fore topmast removed; Mastheads modified and fitted with machine-guns. Range-finder fitted on B and X turrets.



GREAT BRITAIN. Battleships. Ramillies, Resolution, Revenge, Royal Sovereign.

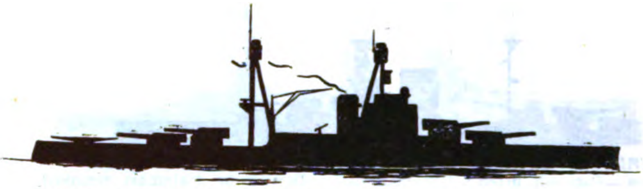
NOTE.—Resolution has a smoke deflector on the funnel. Ramillies and Resolution have tripod mainmasts, a catapult on "X" turret and a crane abreast mainmast.

Main topgallant mast fitted. Fore topmast removed.



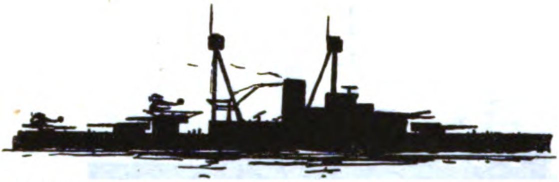
UNITED STATES. Battleships. Idaho, Mississippi, New Mexico.

(After modernisation, 1934.)



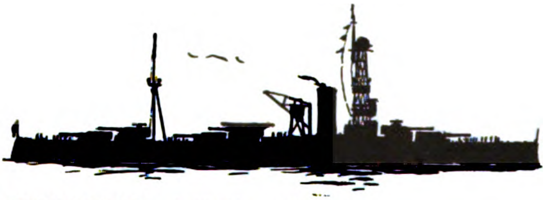
UNITED STATES. Battleship. Pennsylvania.

Catapult on " X " turret added. Crane fitted at stern. Main topmast is on fore side of mast structure.

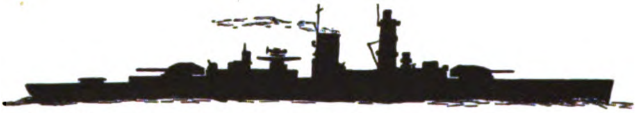


UNITED STATES. Battleships. Nevada, Oklahoma.

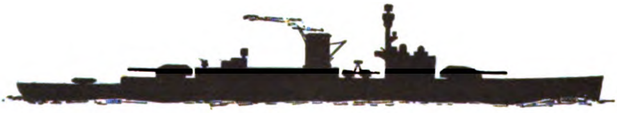
Bridgework extended and mastheads modified.



UNITED STATES. Battleship. Arkansas.

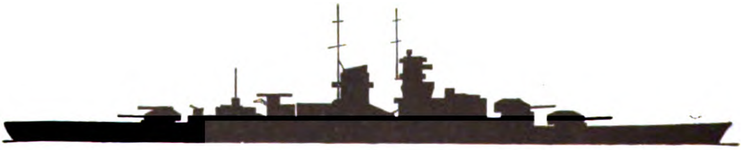


GERMANY. Armoured Ship. Admiral Scheer.



GERMANY. Armoured Ship. Lutzow (*ex*-Deutschland).

Polemast fitted on aft side of funnel. Catapult fitted abaft funnel.
Fore topmast fitted.
Polemast fitted on after superstructure.
Cranes fitted in lieu of derricks.



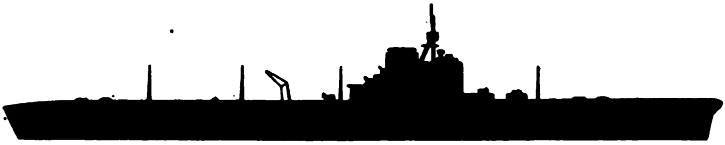
GERMANY. Battle-cruiser. Gneisenau.

Vertical stempiece.

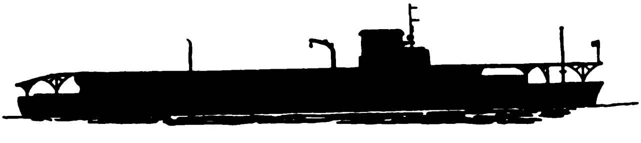
AIRCRAFT AND SEAPLANE CARRIERS AND TENDERS.

GREAT BRITAIN. Aircraft Carrier. Argus. (Training Ship.)
Flight deck levelled forward and extended aft.

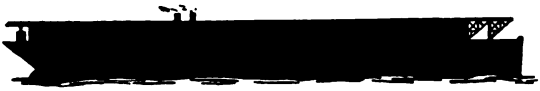
GREAT BRITAIN. Aircraft Carrier. Furious.
Three wireless masts added each side of flight deck.
Quarter deck has been raised one deck.
Deck forward has been levelled and sides blanked off.
Superstructure, polemast and spotting top fitted amidships.



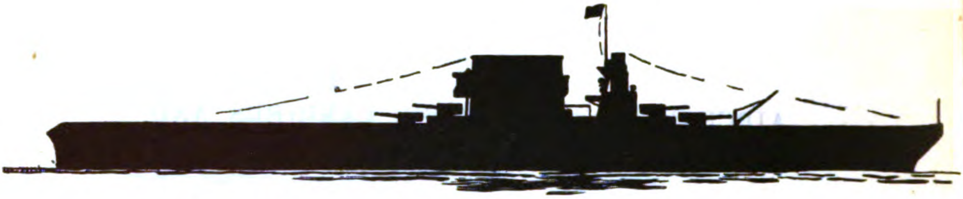
GREAT BRITAIN. Aircraft Carriers. Illustrious, Victorious, Formidable, Indomitable.



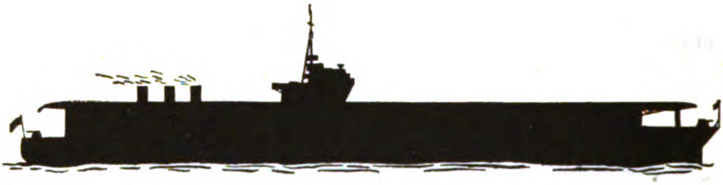
FRANCE. Aircraft Carrier. Béarn.
Space between flight deck and upper deck forward partially blanked off.
Framework fitted on aft side of funnel.



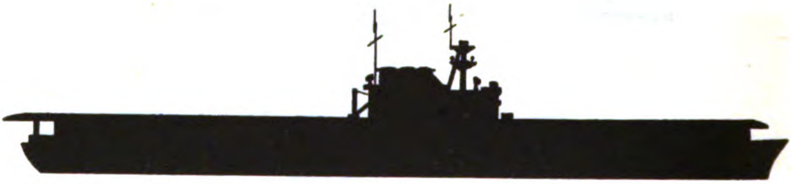
UNITED STATES. Aircraft Tender. Langley.
Foremost third of flight deck removed.
Two pole masts fitted.
Bridge and Derricks fitted forward.



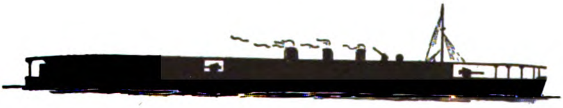
UNITED STATES. Aircraft Carrier. Saratoga.



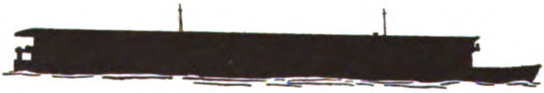
UNITED STATES. Aircraft Carrier. Ranger.
(NOTE.—Funnels hinge outboard.)
Signal masts fitted at ends of flight deck.



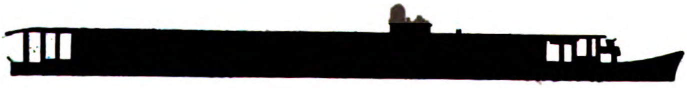
UNITED STATES. Aircraft Carrier. Enterprise.



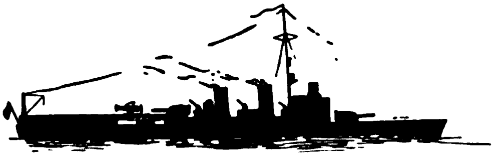
JAPAN. Aircraft Carrier. Hosho.
Funnels hinge outboard.



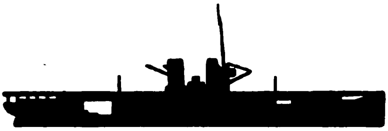
JAPAN. Aircraft Carrier. Ryujo.



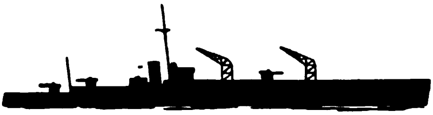
JAPAN. Aircraft Carrier. Koryu.



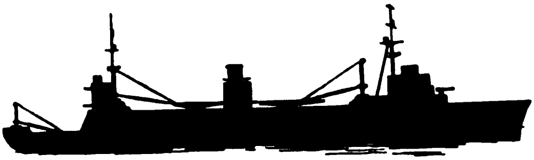
SWEDEN. Aircraft Cruiser. Gotland.



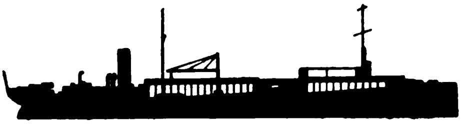
ITALY. Seaplane Carrier. Miraglio.



GREAT BRITAIN. Seaplane Carrier. Albatross.
Catapult fitted forward.

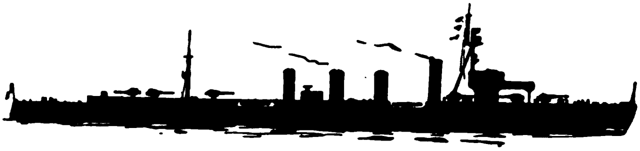


FRANCE. Aviation Transport. Commandant Teste.

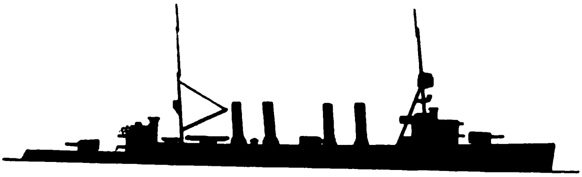


JAPAN. Seaplane Carrier. Notoro.

CRUISERS AND COAST DEFENCE SHIPS.

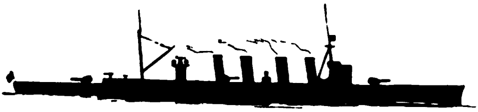


JAPAN. Cruisers. (" Sendai " class.) Naka, Sendai, Jintsu.
Catapult fitted abaft mainmast. Aircraft platform forward removed.
The mainmast is of tripod construction and is fitted with a derrick on its after side.

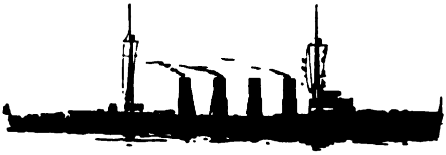


UNITED STATES. Scout Cruisers. (" Omaha " class.) Cincinnati, Concord, Detroit, Marblehead, Memphis, Milwaukee, Omaha, Raleigh, Richmond, Trenton.

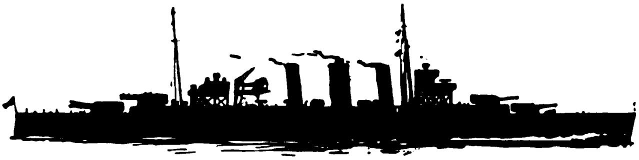
There are small differences in the arrangement of guns aft.
Topmasts shortened.



ROYAL AUSTRALIAN NAVY. Cruiser. Adelaide.
Forward funnel removed and superstructure modified.

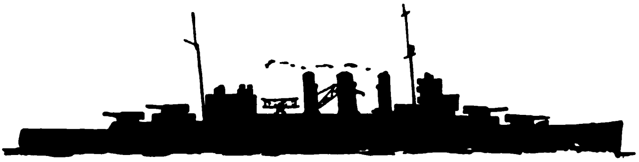


ITALY. Light Cruiser. Taranto (*ex*-German Strassburg).



GREAT BRITAIN. Cruisers. (" London " class.) Devonshire, London, Sussex. (" Norfolk " class.) Norfolk.
Fore topgallant mast added.

ROYAL AUSTRALIAN NAVY. Cruiser. Shropshire.

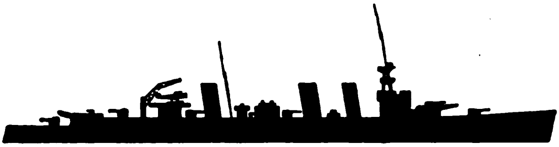


GREAT BRITAIN. Cruisers. ("Kent" class.) Cumberland, Suffolk, Kent, Berwick.

Kent has a sternwalk.
Kent and Berwick are flush-decked.

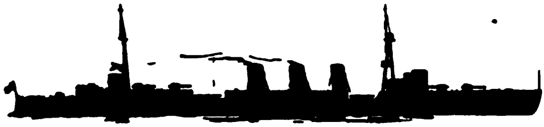
ROYAL AUSTRALIAN NAVY. Cruiser. ("Kent" class.) Australia.

No hangars fitted.



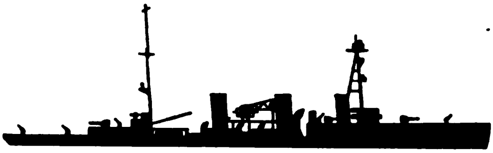
GREAT BRITAIN. Cruisers. ("E" class.) Emerald, Enterprise.

In **Enterprise** the forward 6-in. guns are in a twin mounting on the forecastle deck.

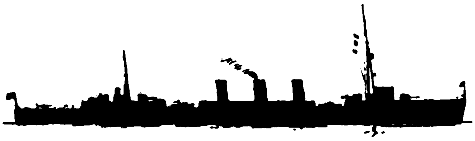


JAPAN. Light Cruisers. ("Kuma" class.) Kiso, Kitakami, Kuma, Oi, Tama. ("Natori" class.) Isudzu, Natori, Nagara, Yura, Kinu, Abukuma.

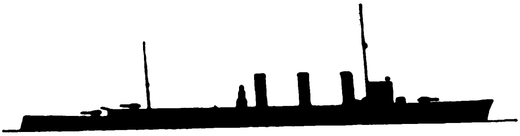
Catapult fitted before mainmast. The mainmast is of tripod construction and is fitted with a derrick on its fore side.
Bridgework modified and anti-flare tops fitted to funnels.



SOVIET UNION. Cruiser. Profintern.



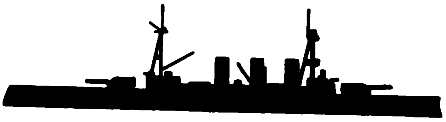
JAPAN. Light Cruisers. ("Tenryu" class.) Tatsuta, Tenryu.



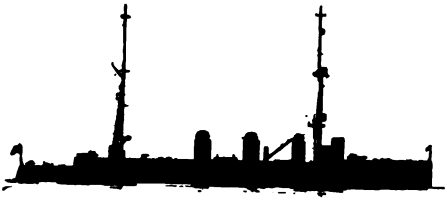
SPAIN. Light Cruiser. Mendez Nuñez.

Foremast is tripod. Fore topgallant mast added.
A.A. armament fitted between second funnel and mainmast.
Searchlight platform fitted round after funnel.

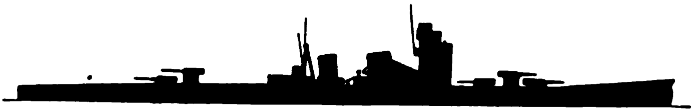
CRUISERS.



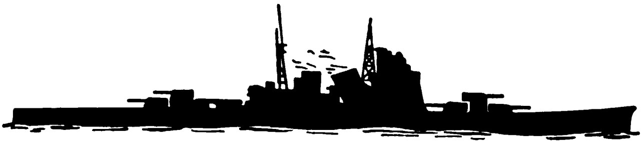
GREECE. Cruiser. Averoff.



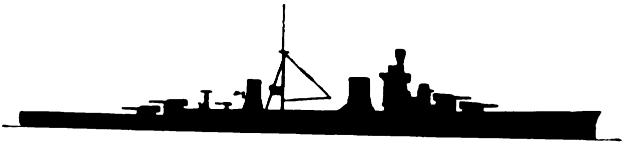
ITALY. Scout Cruiser. Quarto.



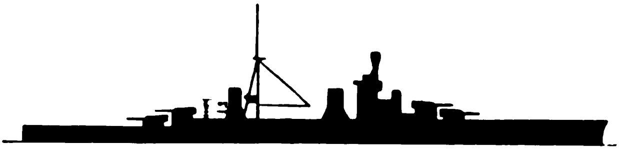
JAPAN. Cruisers. (" Nachi " class.) Nachi, Myoko, Ashigara, Haguro.
Catapult fitted abaft mainmast.



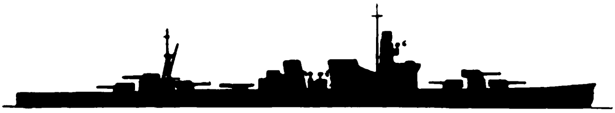
JAPAN. Cruisers. ("Takao" class.) Takao, Atago, Chokai, Maya.



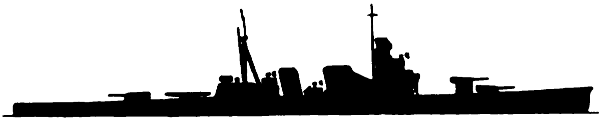
ITALY. Cruiser. (Modified " Trento " class.) Bolzano.
Forward superstructure faired into funnel. Catapult fitted amidships.
Clinker screens fitted to funnels.



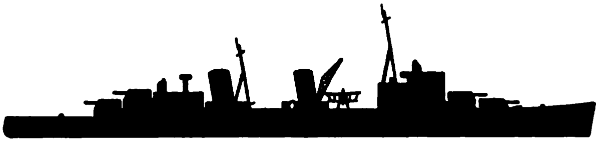
ITALY. Cruiser. ("Zara" class.) Gorizia.
Forward superstructure faired into funnel. Catapult fitted forward.
Clinker screens fitted to funnels.
Range-finder fitted abaft after funnel.



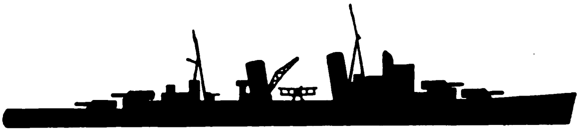
JAPAN. Cruisers. ("Furutaka" class.) Furutaka, Kato.
The tops of the funnels are square to the funnels.
Polemast raked.



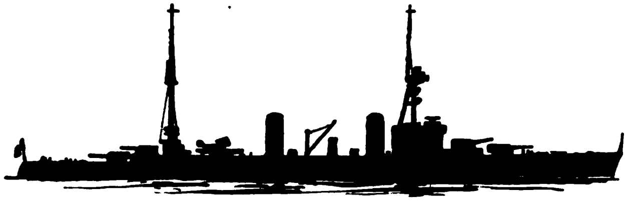
JAPAN. Cruisers. ("Furutaka" class.) Aoba, Kinugasa.
The tops of the funnels are square to the funnels.
Polemast raked.



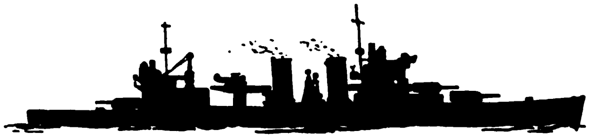
GREAT BRITAIN. Cruiser. (Improved "Southampton" class.) Belfast.



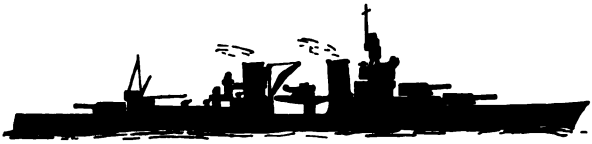
GREAT BRITAIN. Cruisers. ("Southampton" class.) Newcastle, Sheffield, Birmingham, Glasgow, Liverpool.



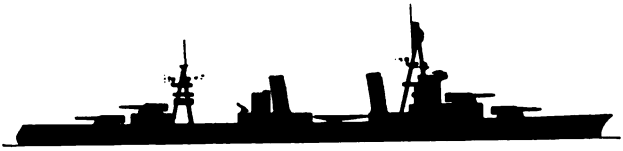
FRANCE. Cruisers. ("Duquesne" class.) Duquesne, Tourville. ("Suffren" class. Suffren, Colbert, Foch, Dupleix.
Colbert, Dupleix and Foch have tripod mainmasts and the catapults between the funnels.
Fore topmast shortened in Foch, Duquesne and Tourville and removed in Dupleix and Colbert.



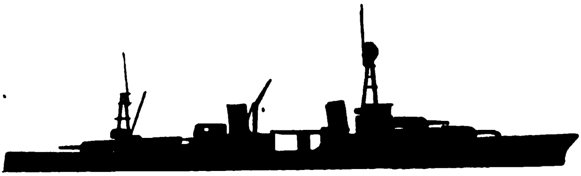
UNITED STATES. Cruisers. ("Astoria" class.) New Orleans, Minneapolis, San Francisco, Tuscaloosa.
Forward funnel fitted with clinker screen.



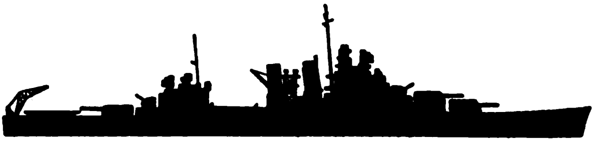
UNITED STATES. Cruisers. Portland, Indianapolis.
Foremost funnel and fore topmast are raised.



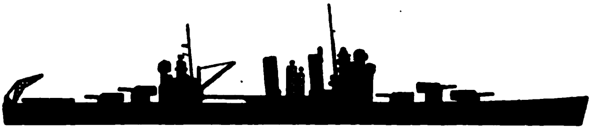
UNITED STATES. Cruisers. (" Pensacola " class.) Salt Lake City, Pensacola.
Crane fitted on fore side of after funnel and derricks on after side.



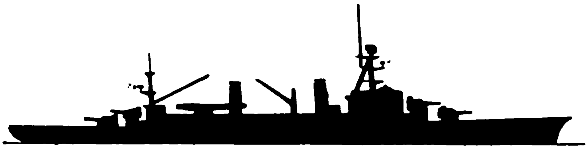
UNITED STATES. Cruisers. (" Chester " class.) Northampton, Chester, Louisville.
("Augusta" class.) Augusta.
Fore topmast shortened.



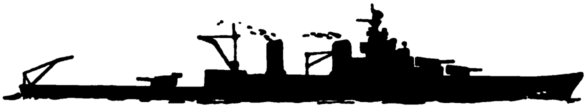
UNITED STATES. Cruiser. Wichita.



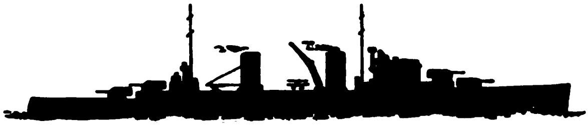
UNITED STATES. Cruisers. Boise, Brooklyn, Honolulu, Nashville, Philadelphia, Phœnix, Savannah, St. Louis.



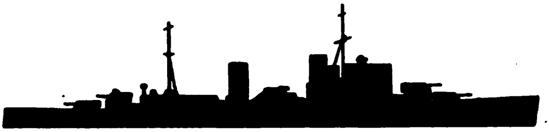
FRANCE. Training Cruiser. Jeanne d'Arc.
The catapults and fore topmast are removed.



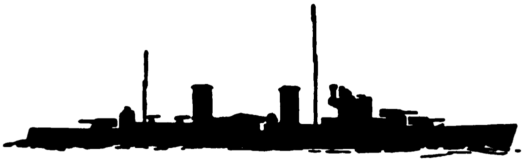
FRANCE. Cruisers. Jean-de-Vienne, La Galissonnière, Marseillaise, Gloire, Montcalm, Georges Leygues.
Catapult fitted on after turret.



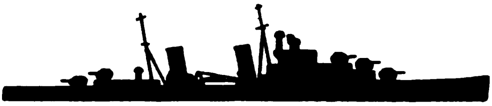
ROYAL AUSTRALIAN NAVY. Cruiser. (Modified "Leander" class.) Hobart.
Catapult fitted between funnels.



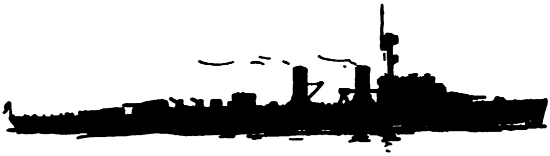
GREAT BRITAIN. Cruisers. ("Fiji" class.) Ceylon, Jamaica, Gambia, Uganda, Kenya Mauritius, Nigeria.



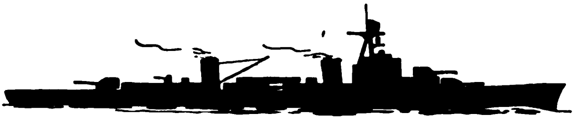
GREAT BRITAIN. Cruisers. ("Arethusa" class.) Arethusa, Penelope, Aurora.
Derrick fitted on aft side of after funnel.



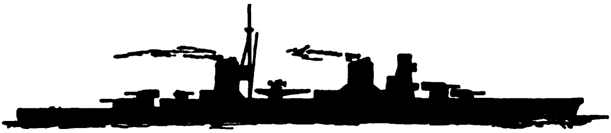
GREAT BRITAIN. Cruisers. ("Dido" class.) Cleopatra, Dido, Euryalus, Scylla, Sirius.



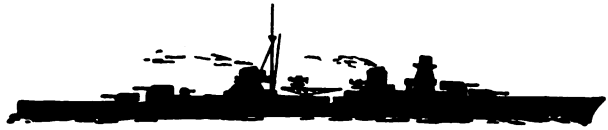
GERMANY. Light Cruiser. Köln.
Polemast fitted on aft side of after funnel. Catapult fitted between funnels.



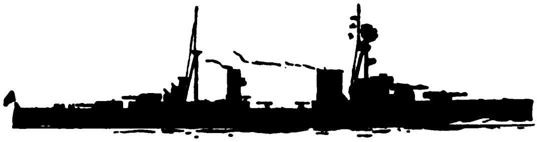
FRANCE. Cruiser Minelayer. Emile Bertin.
Derrick fitted on fore side of catapult.
Searchlight platform built round after funnel.
Small mast fitted on fore side of after turret.



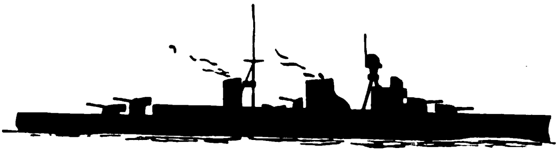
ITALY. Cruisers. ("Condottieri" class.) Montecuccoli, Muzio Attendolo.



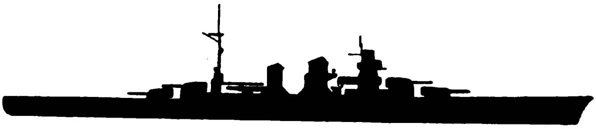
ITALY. Cruisers. ("Attendolo" class.) Eugenio di Savoia, Filiberto Duca d'Aosta.



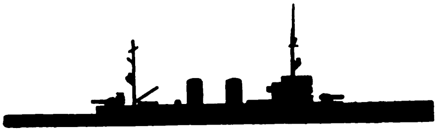
ITALY. Cruisers. ("Condottieri" class.) Alberico de Barbiano, Alberto di Giussano.
Fore topmast and stays to mainmast removed.
Derrick fitted on fore side of mainmast. Bridgework extended.



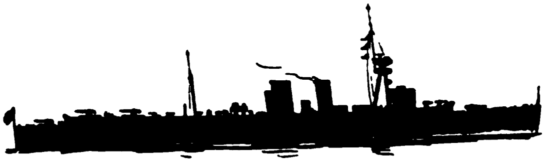
ITALY. Cruisers. ("Condottieri" class.) Armando Diaz, Luigi Cadorna.
Fore topmast removed. Catapult fitted between after funnel and "X" turret.
Derrick fitted on fore side of mainmast.



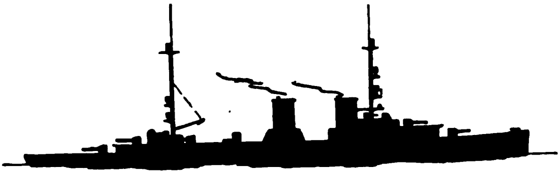
ITALY. Cruisers. Duca degli Abruzzi, Giuseppe Garibaldi.



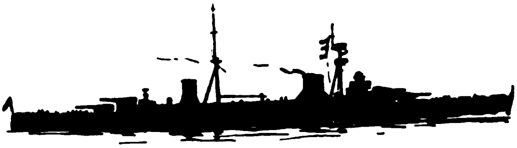
ITALY. Cruiser. Bari (*ex*-**German Pillau**).



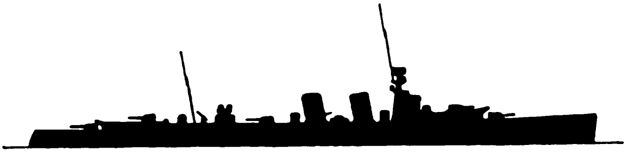
GREAT BRITAIN. Cruiser Minelayer. Adventure. (Stern has been extended.)
Derricks added abreast masts.



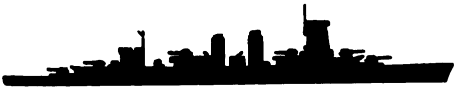
NETHERLANDS. Cruiser. Sumatra.
Fore topmast shortened and foremast made larger.
Mainmast shortened, moved forward and fitted with derrick and searchlights.
Aircraft stowed between funnels and crane fitted.



ITALY. Cruiser. ("Trento" class.) Trieste.
Fore topmast removed.
Bridgework extended.

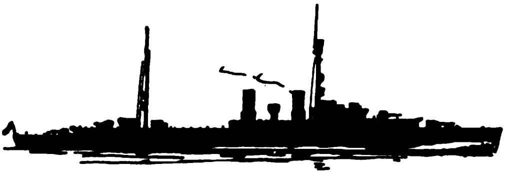


SPAIN. Cruisers. Galicia, Almirante Cervera, Miguel de Cervantes.
The mainmasts are tripods.
Fore topmast and topgallant mast removed.

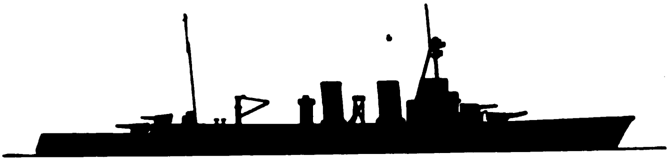


SPAIN. Cruiser. Navarra (*ex*-**Republica**).

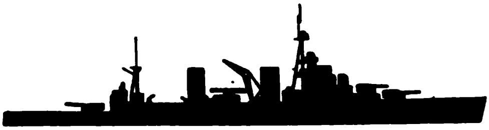
CRUISERS.



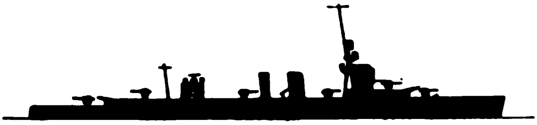
GERMANY. Light Cruiser. Emden.
Polemast fitted on aft side of after funnel.
Superstructure added before mainmast. Fore topmast shortened.
Mainmast shortened and surmounted by a searchlight platform.



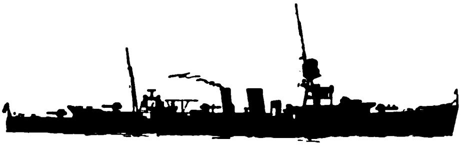
FRANCE. Cruisers. ("Duguay-Trouin" class.) La Motte Picquet, Duguay-Trouin, Primauguet.
Catapult fitted on quarter deck.
Fore topmast removed and mast head modified.



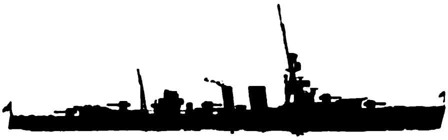
ARGENTINA. Cruiser. La Argentina.



GREAT BRITAIN. Cruisers. ("D" class.) Danae, Dauntless.
Main topmast added.

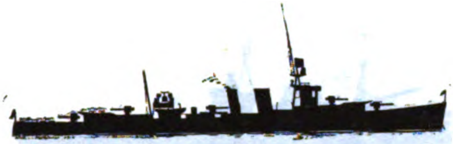


GREAT BRITAIN. Cruisers. ("D" class: repeat vessels.) Delhi, Dunedin, Diomede, Despatch, Durban.
Foremost gun in Diomede is housed in a gunhouse.
Topmasts removed.

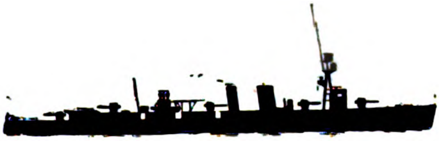


GREAT BRITAIN. Cruisers. ("Ceres" class.) Cardiff, Ceres, Curacoa.

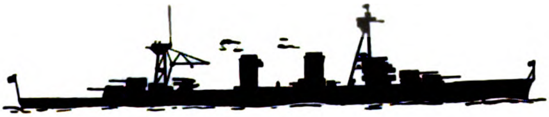
GREAT BRITAIN. **Anti-Aircraft Cruisers.** **("Carlisle" class.)** **Colombo, Capetown.**



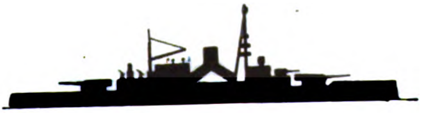
GREAT BRITAIN. **Cruiser.** **Carlisle.**
Topmast removed.



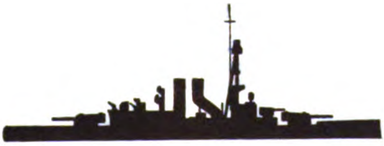
GREAT BRITAIN. **Cruisers.** **("Caledon" class.)** **Caledon, Caradoc.**
Mainmast lengthened.



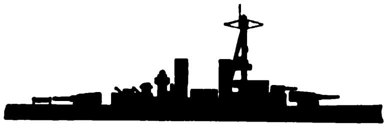
SOVIET UNION. **Cruiser.** **Krasni Kavkaz.**
Catapult fitted between mainmast and funnel.
A.A. guns fitted between funnels.



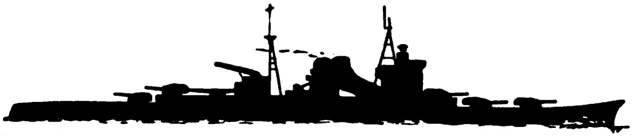
SWEDEN. **Coast Defence Ship.** **Gustav V.**
Fore topmast added. Bridgework enlarged.
Mainmast and derrick removed.



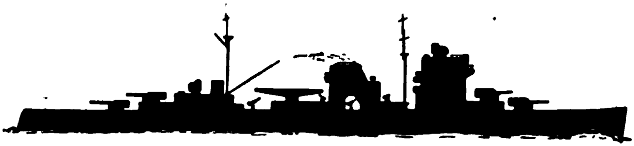
SWEDEN. **Coast Defence Ship.** **Sverige.**



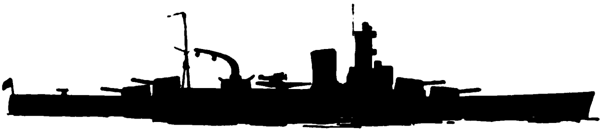
SWEDEN. Coast Defence Ship. Drottning Victoria.



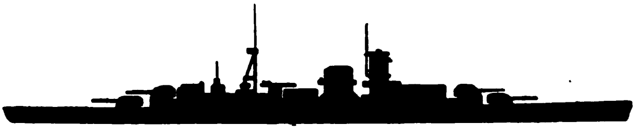
JAPAN. Cruisers. Suzuya, Kumano, Tone, Tikuma.



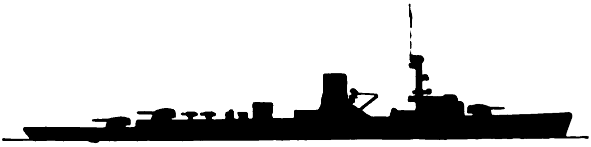
SPAIN. Cruiser. Canarias.
Masts removed.



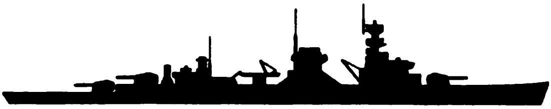
FRANCE. Cruiser. Algérie.
Superstructure amidships added.
Crane replaced by two others.



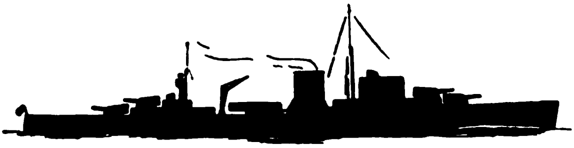
GERMANY. Cruiser. Admiral Hipper.



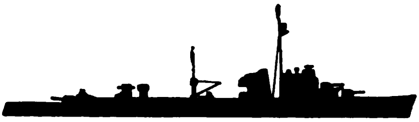
GERMANY. Light Cruiser. Leipzig.
Polemast fitted on aft side of funnel. Catapult fitted between funnel and foremast.
Crane fitted on fore side of funnel. Fore topmast shortened.



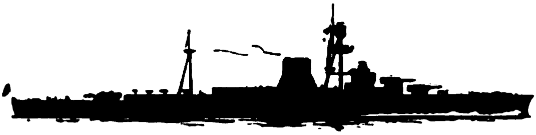
GERMANY. Light Cruiser. Nurnberg.



GREAT BRITAIN. Cruisers. ("Leander" class.) Leander, Achilles, Orion, Ajax.

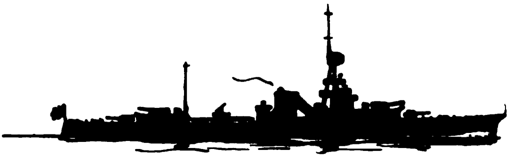


NETHERLANDS. Cruiser. Tromp.



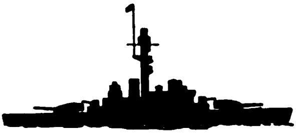
ARGENTINA. Cruisers. Almirante Brown, Vinticinco de Mayo.

Fore topmast shortened, main topmast lengthened.
Derrick fitted on fore side of mainmast.
Searchlight platform fitted on mainmast.
Superstructure built on aft side of mainmast.

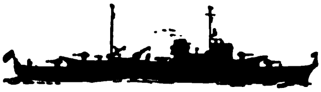


JAPAN. Light Cruiser. Yubari.

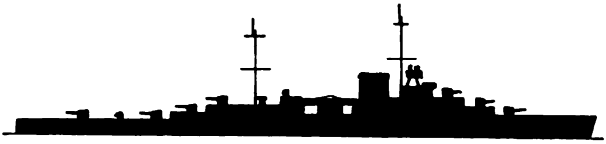
Masts and funnel raked aft.



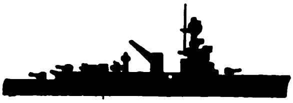
FINLAND. Armoured Gunboats. Vainamoinen, Ilmarinen.



NORWAY. Minelaying and Training Ship. Olav Trygvasen.
Both cranes are fitted abreast mainmast.



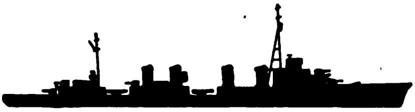
GREAT BRITAIN. Cruisers. Frobisher, Hawkins.



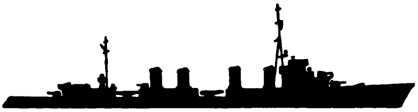
DENMARK. Cruiser. Niels Juel.

FLOTILLA LEADERS AND DESTROYERS

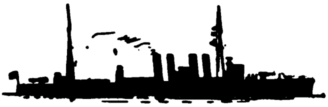
(See pp. 198–248.)



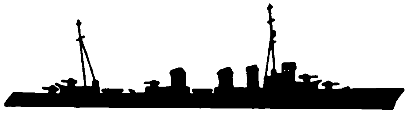
FRANCE. Flotilla Leaders. Cassard, Vauquelin, Kersaint, Tartu, Le Chevalier Paul, Aigle, Albatros, Epervier, Milan, Gerfaut, Vautour.



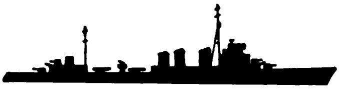
FRANCE. Flotilla Leaders. Guépard, Lion, Vauban, Valmy, Verdun.



UNITED STATES. Destroyers. The "Flush Deck" type; all U.S. destroyers except those with three funnels.
Mainmast shortened.
Also, Great Britain—"Town" class.

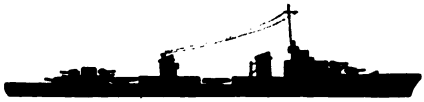


FRANCE. Flotilla Leaders. Tigre, Léopard, Lynx.
Platform added before after turrets.
Léopard and Lynx are under the control of the Free French.

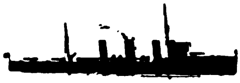


FRANCE. Destroyers. Mistral, Ouragon, Simoun, Tempête, Tramontane, Typhon, Trombe, Tornade.

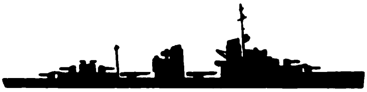
POLAND. Destroyer. Burza is similar. Mainmast shortened.



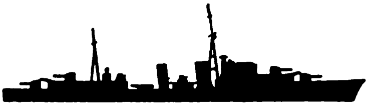
FRANCE. Flotilla Leaders. "Le Fantasque" class. L'Audacieux, Le Malin, Le Terrible, Le Triumphant, L'Indomitable.
Control platform added abaft after funnel.
Le Triumphant is under the control of the Free French.



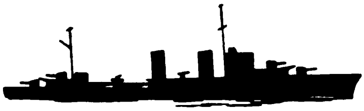
ITALY. Destroyers. Gen. A. Cantore, Gen. A. Chinotto, Gen. A. Papa, Gen. A. Cascino, Gen. M. Prestinari, Gen. C. Montanari, A. Bassini, E. Cosenz, F. Stocco, G. Carini, G. Medici, G. la Farina, G. la Masa, G. Sirtori, N. Fabrizi.
Bridgework extended.



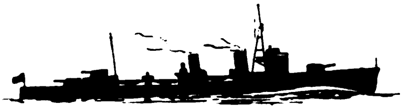
GERMANY. Destroyers. "Maass" class.



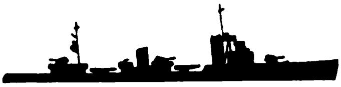
GREAT BRITAIN. Destroyers. "Tribal" class.



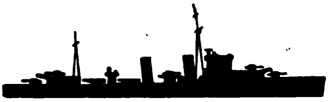
YUGO SLAVIA. Flotilla Leader. Dubrovnik.



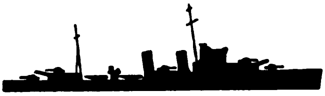
JAPAN. 1st Class Destroyers. "Fubuki" class. (23 ships.)



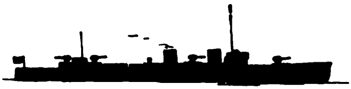
ITALY. Flotilla Leaders (Scouts). "Navigatori" class. (11 ships.)
Mainmast lengthened.



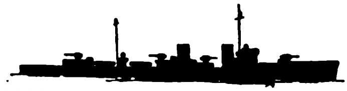
GREAT BRITAIN. Flotilla Leader. Inglefield.



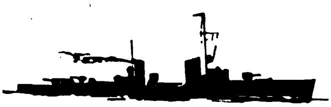
GREAT BRITAIN. Flotilla Leader. Faulknor.



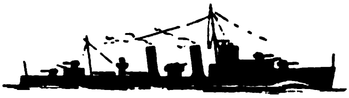
JAPAN. 1st Class Destroyers. "Mutsuki" class (12 ships), and "Kamikase" class (9 ships).



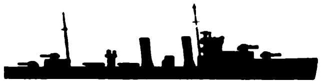
JAPAN. 1st class Destroyers. "Minekase" class (15 ships).



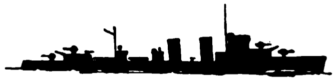
GERMANY. Destroyers. Iltis, Wolf, Tiger, Luchs, Jaguar, Leopard, Seeadler, Greif, Albatros, Kondor, Falke, Möwe.



GREAT BRITAIN. Destroyers. "Acasta," "Beagle," "Crusader" and "Defender" classes.
"Acasta" and "Crusader" classes have davits at stern.
Flotilla Leaders. Duncan, Kempenfelt.

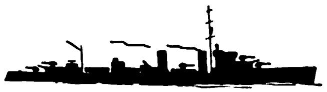


GREAT BRITAIN. Destroyers. "Greyhound," "Hero" and "Intrepid" classes.

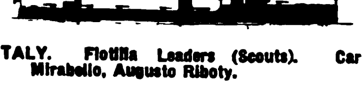


PORTUGAL. Destroyers. Vouga, Lima, Dao, Tejo, Douro.

COLOMBIA. Destroyers. Antioquia, Caldas.



ARGENTINA. Flotilla Leaders. Mendoza, La Rioja, Tucuman.

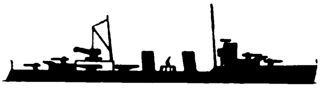


ITALY. Flotilla Leaders (Scouts). Carlo Mirabello, Augusto Riboty.

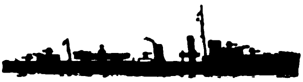
GREAT BRITAIN. Flotilla Leaders. Keppel, Douglas, Campbell, Mackay, Malcolm, Montrose.

ROYAL AUSTRALIAN NAVY. Flotilla Leader. Stuart.

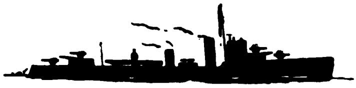
SPAIN. Flotilla Leaders. Almirante Valdes, etc., generally similar.



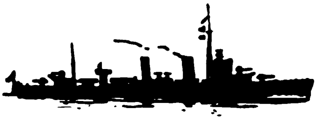
NETHERLANDS. Destroyers. Van Ghent, Piet Hein, Banckert, Van Nes.



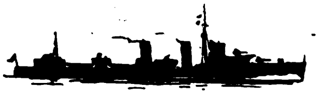
GREAT BRITAIN. Destroyers. Vanessa, Vanoc, Vanquisher, Velox, Vendetta, Versatile, Vesper, Vidette, Violent, Vivacious, Vimy (*late* Vancouver), Valorous, Viscount, Walker, Walpole, Walrus, Warwick, Watchman, Westcott, Winchelsea, Wrestler, Vansittart, Venomous, Verity, Volunteer, Wanderer, Windsor.



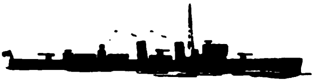
GREAT BRITAIN. Destroyers. Whitehall, Whitshed, Witherington, Wivern, Wolverine, Worcester, Wishart, Witch.



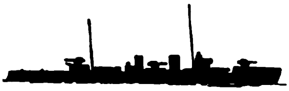
GREAT BRITAIN. Destroyers. Ambuscade, Amazon.



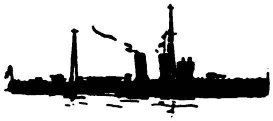
CHILE. Destroyers. Serrano, Orella, Riquelme, Hyatt, Videla, Aldea.
Mainmast heightened.



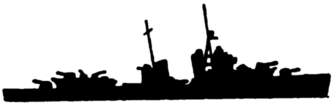
SWEDEN. Destroyers. Klas Horn, Klas Uggla, Ehrensköld, Nordenskjold.
Davit fitted at stern.



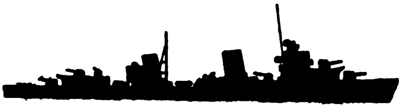
JAPAN. 2nd Class Destroyers. "Wakatake" class (7 ships), and "Kaya" class (19 ships).



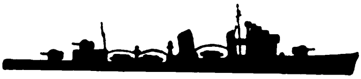
ITALY. Destroyers. Q. Sella, F. Crispi. Bridgework extended. Platform fitted round mainmast.



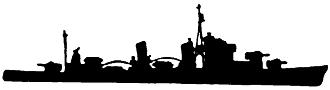
UNITED STATES. Destroyers. "Mahan" class.



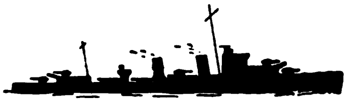
SOVIET UNION. Destroyers. "Leningrad" class.



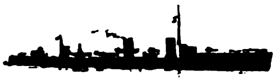
JAPAN. Destroyers. "Hibiki" class.



JAPAN. Destroyers. "Ariake" class (6 ships).

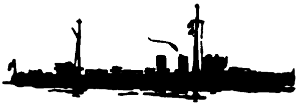


GREAT BRITAIN. Flotilla Leader. Faulkner. Destroyers. "Eclipse" and "Fearless" classes similar but gun between funnels omitted.

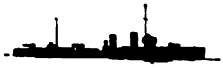


GREAT BRITAIN. Destroyers. Admiralty "S" class.

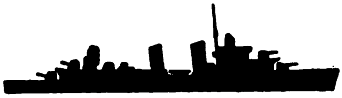
ITALY. Destroyers. San Solferino. Martino. Bridge and foremost funnel heightened.



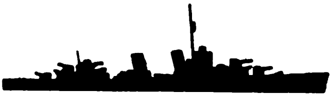
ITALY. Destroyers. Turbine, Euro, Ostro, Bridge and foremost funnel heightened.



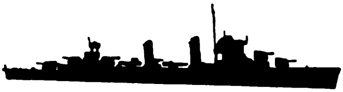
DENMARK. Torpedo Boats (1st Class). Glentin, Hogen, Ornen, Laxen, Dragen, Hvalen.



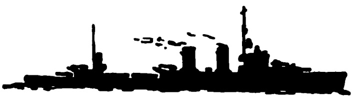
UNITED STATES. Destroyers. "Benson" class.



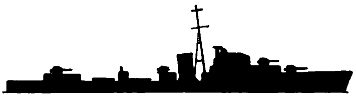
UNITED STATES. Destroyers. Dunlap, Fanning.



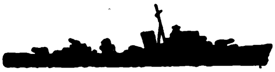
UNITED STATES. Destroyers. Grayson, Eberle, Plunkett, Kearney, Gwin, Meredith, Livermore, Monssen, Woolsey, Ludlow, Edison, Ericsson, Wilkes, Nicholson, Swanson, Ingraham, Fletcher, Radford, Jenkins, La Valette, Nicholas, O'Bannon, Chevalier, Percival.



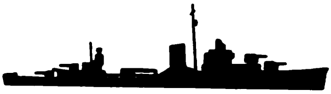
UNITED STATES. Destroyers. "Farragut" class.



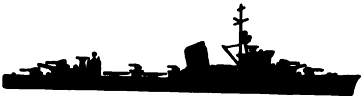
GREAT BRITAIN. Destroyers. "Javelin" and "Kelly" classes.



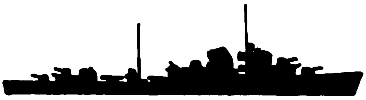
GREAT BRITAIN. Destroyers. "Hunt" class.



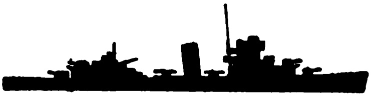
UNITED STATES. Destroyers. "Maury" class.



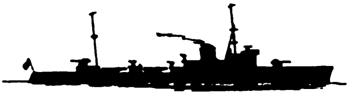
POLAND. Destroyer. Blyskawica.



SOVIET UNION. Destroyers. "Stremitelni" class.

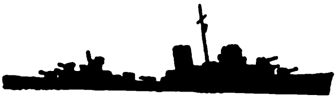


UNITED STATES. Destroyers. "Somers" class.

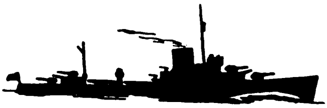


ITALY. Destroyers. Dardo, Freccia, Strale, Saetta, Folgore, Lampo.

Bridgework extended. Control platform fitted between torpedo tubes.



UNITED STATES. Destroyers. "Gridley" class.



GREECE. Destroyers. Spetzai and Coundouriotis.

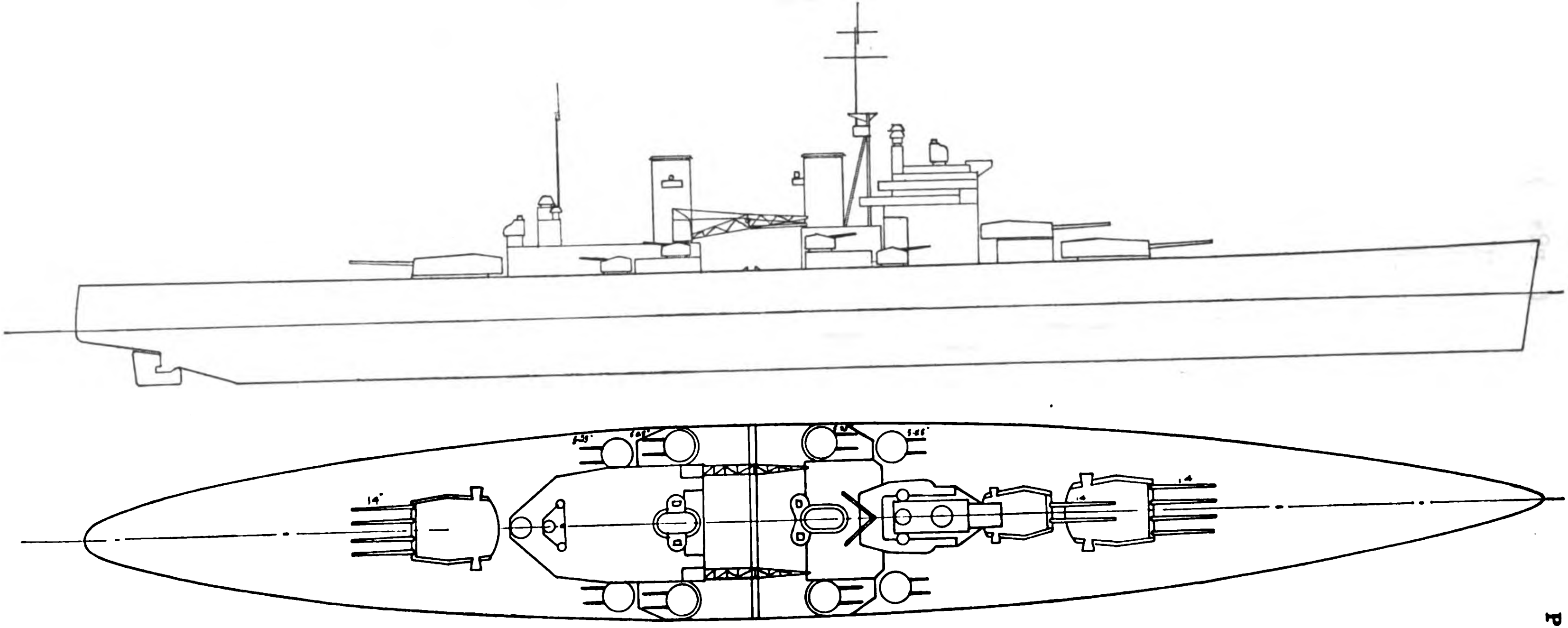
PICTORIAL SECTION

PLANS AND ELEVATIONS OF WARSHIPS

GREAT BRITAIN.

BATTLESHIPS.

King George V. Duke of York. Howe. Anson.

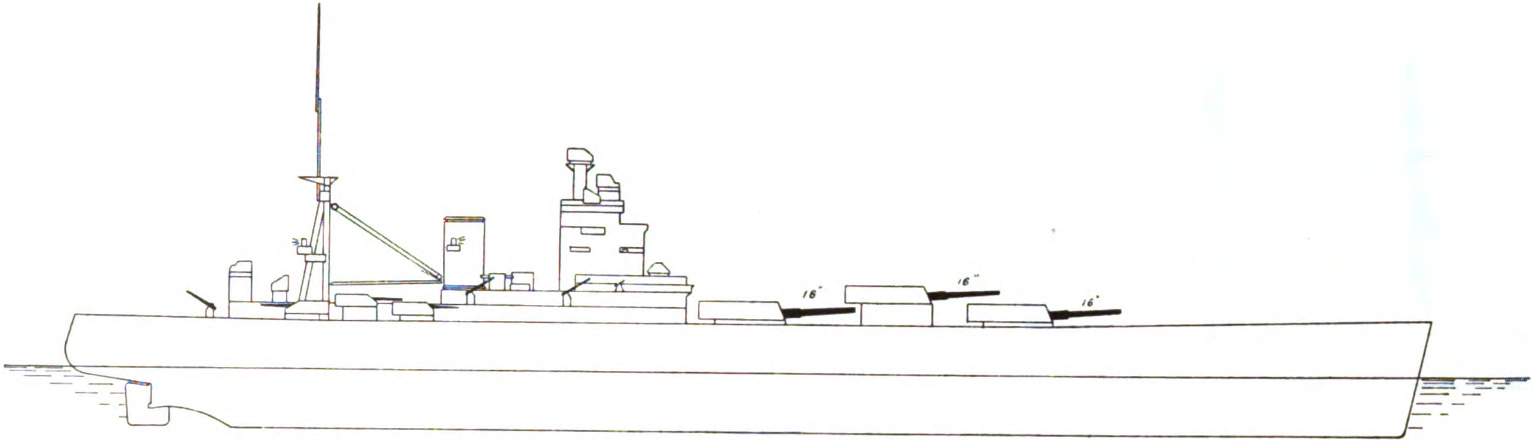


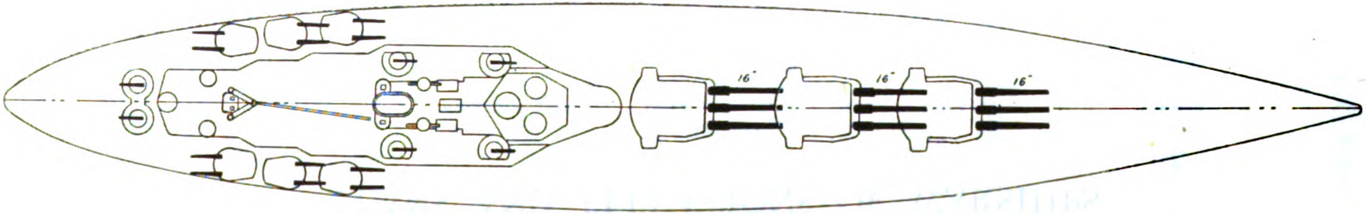
Length 745 ft.; 35,000 tons; Completed 1941–42.
Armament, 10—14-in.; 16—5·25-in; 5 m.p.p.; 4 Aircraft; Catapult.

GREAT BRITAIN.

BATTLESHIPS.

Nelson. **Rodney.**





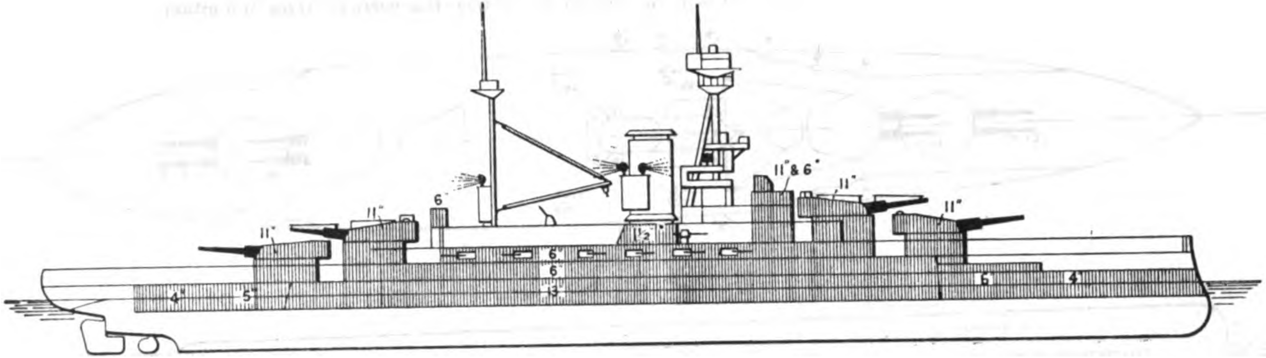
Length (extreme), 710 ft.; Rodney, 33,900 tons; Nelson, 33,500 tons; Speed, 23 knots; Completed, 1927.
Armament, 9—16-in.; 12—6-in.; 6—4·7-in. A.A.; 4—3-pr.; 2—2-pr. Pom Poms (3 in Rodney); 11 L; 5 M.; 2—24-in. submerged torpedo tubes.

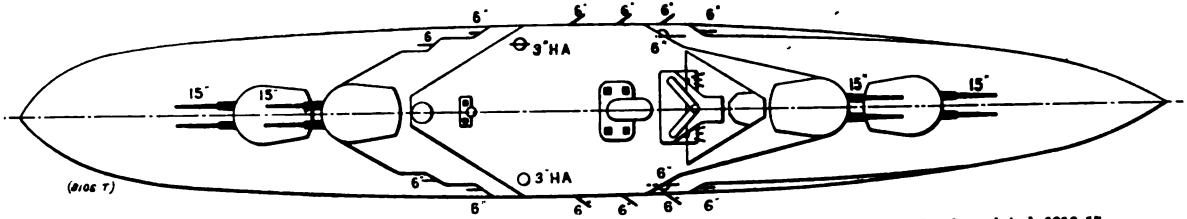
NOTE.—A 14-in. waterline armour belt extends from approximately the foremost 16-in. turret to approximately the aftermost 6-in. turret. The turret armour varies from 16-in. to 9-in. Correction to plan.—Mast structure increased. Nelson has a crane amidships. Rodney has a catapult on "C" turret.

GREAT BRITAIN.

BATTLESHIPS.

Royal Sovereign. **Revenge.** **Resolution.** **Ramillies.**





Length (extreme), 620 ft. 6 ins.* ; Length B.P., 580 ft. ; 29,150 tons ; Speed, 23 knots (without bulges) ; Completed, 1916-17.
Armament, 8—15-in. ; 12—6-in. ; 8—4-in. A.A. ; 4—3-pr. ; 5 M. ; 10 L. ; 2—21-in. submerged torpedo tubes in Revenge. Revenge and Ramillies have 4—4-in. H.A. Revenge has 2—2-pr. Pom Poms.
Corrections to plan.—Searchlights on mainmast and the superstructure 6-in guns now removed. The 4-in. A.A. guns are fitted on the superstructure instead of the 3-in. H.A. shown. Fore topmast removed. Main topgallant mast fitted.

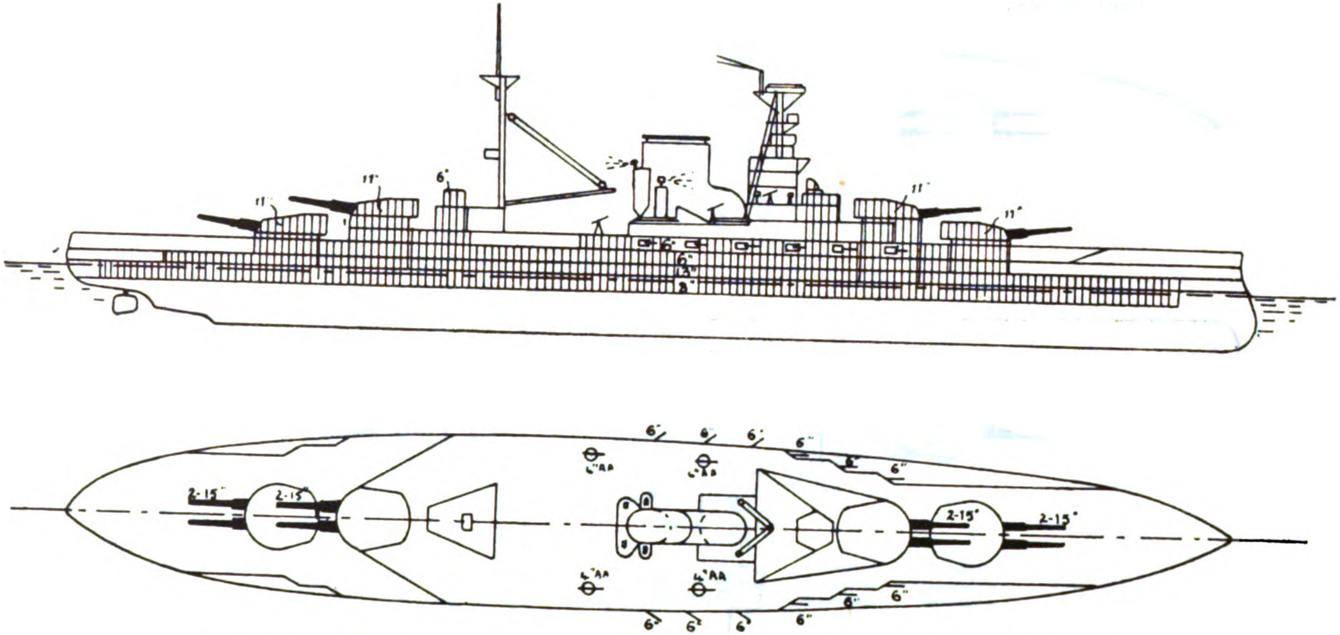
* Revenge, 625 ft. 9 in.

Resolution and Ramillies have tripod mainmasts, a catapult on "X" Turret and a crane abreast the mainmast, and carry 1 aircraft each. Resolution has clinker screen fitted to funnel.

GREAT BRITAIN.

BATTLESHIP.

Malaya.



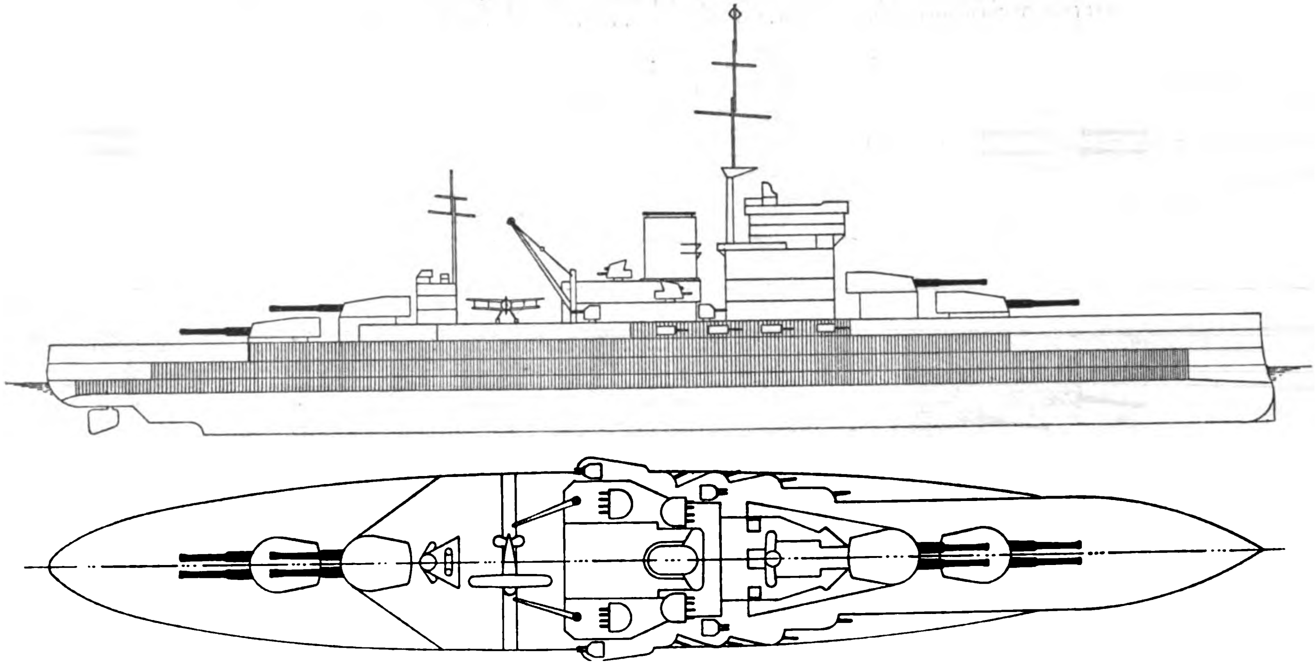
Length B.P., 600 ft.; (extreme 639¾—644½ ft.); 31,100 tons; Speed, 25 knots (without bulges); Completed, 1915–1916.
Armament, 8—15-in.; 12—6-in.; 8—4-in. A.A.; 4—3-pr.; 5 M.; 10 L.

Correction to plan. Add main topgallant mast, catapult before mainmast, a hangar and crane each side abreast funnel. Derrick removed.

GREAT BRITAIN.

BATTLESHIPS.

Warspite. **Queen Elizabeth.** **Valiant.**



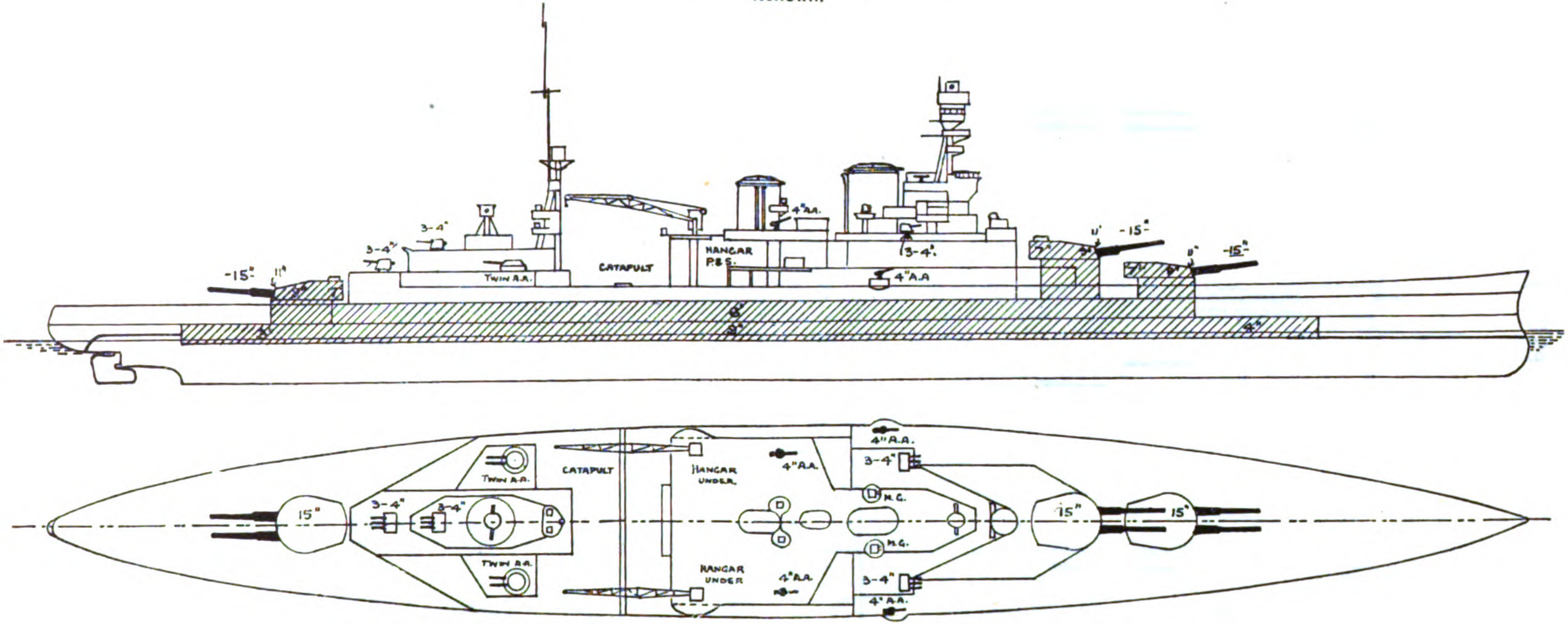
Length B.P., 600 ft.; (extreme 639 ft. 8 ins.—646 ft.); 31,100 tons; Speed, 25 knots; Completed, 1915–1916.. Armament, 8—15-in.; 12—6-in.; 8—4-in. A.A.; 4—3-pdr. Pom Poms; 1 catapult; 1 aircraft. Valiant has 4—4-in. A.A.

Notes.—Queen Elizabeth and Valiant have tripod foremasts.
Sternwalk fitted in Warspite and Queen Elizabeth.

GREAT BRITAIN.

BATTLE-CRUISER.

Renown.

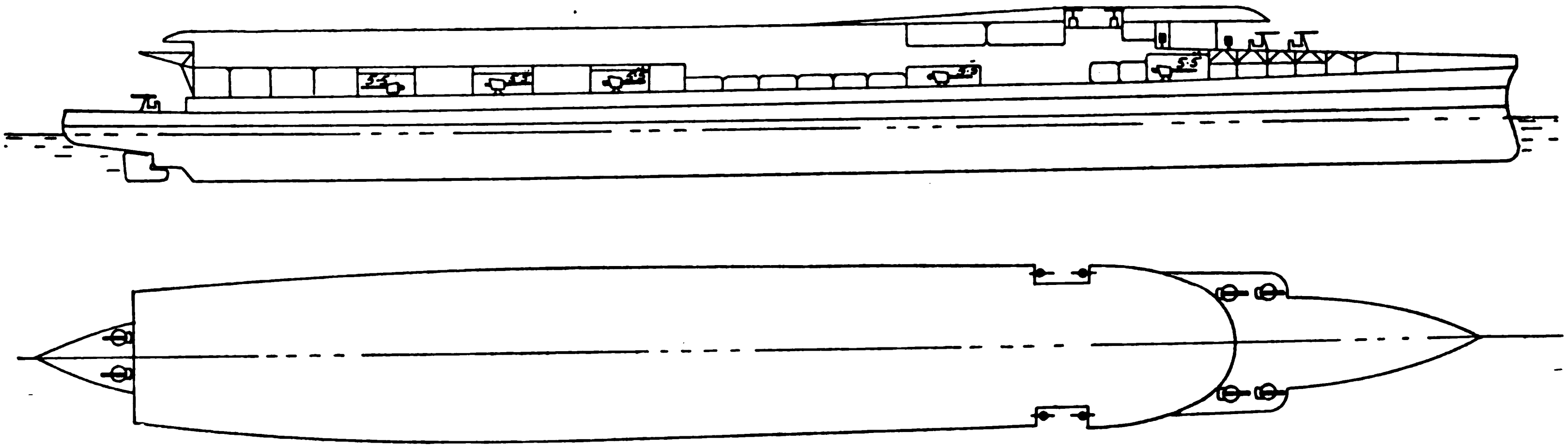


Length (extreme), 794 ft. 2 ins.; 32,000 tons; Speed, 31½ knots (without bulges); Completed, 1916. Reconstructed 1939.
Armament, 6—15-in.; 12—4-in.; 4—4-in. A.A.; 2 twin A.A.; 2 multi-machine guns; 1 catapult; 4 aircraft.
Correction to plan.—Forward superstructure modified. Topmast and topgallant mast fitted to foremast.
The after funnel is similar to the foremost funnel.
Tripod mainmast replaced by polemast. Main topgallant mast removed.

GREAT BRITAIN:

AIRCRAFT CARRIER

Furious.



Length (extreme), 786 ft. 6 ins. ; 22,450 tons ; Speed, 31 knots ; Completed as a cruiser, 1917 ; Conversion to aircraft carrier completed, 1925.

Armament, 10—5·5-in. ; 3—4-in. A.A. ; 4—3-pr. ; 4—2-pr. ; 46 smaller ; 33 aircraft.

Three wireless masts added each side of flight deck. Quarter deck has been raised one deck.

Top deck forward has been levelled off and closed in.

Superstructure, polemast and spotting-top fitted amidships on the starboard side.

GREAT BRITAIN.

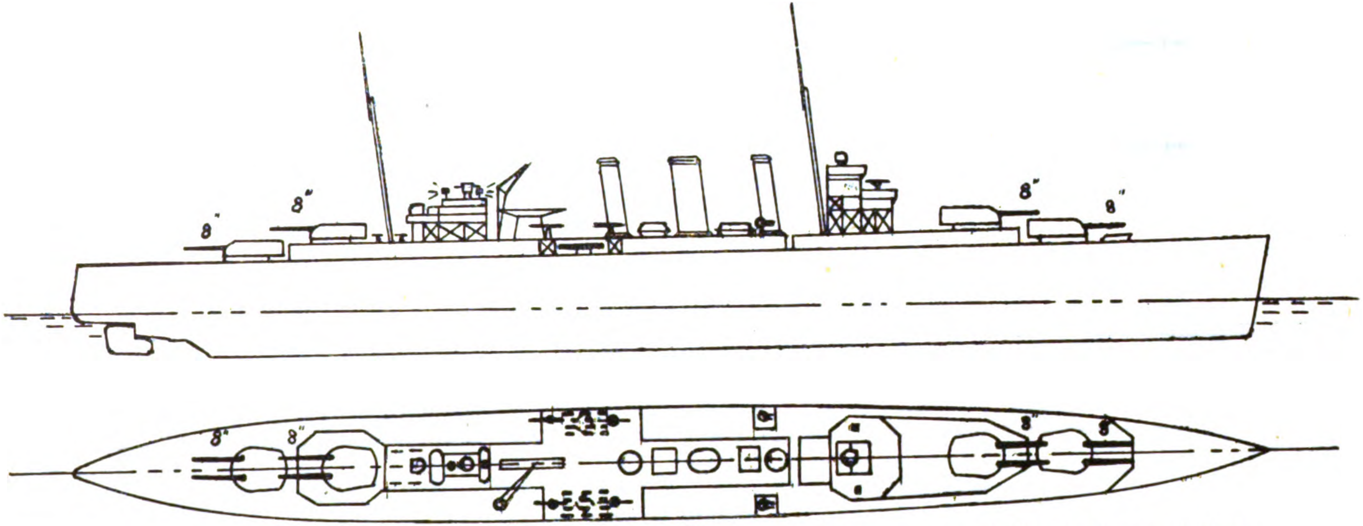
CRUISERS.

"London" Class.

London. Sussex. Devonshire
Royal Australian Navy. Cruiser. Shropshire.

"Norfolk" Class.

Norfolk.*



Displacements, 9,730—9,900 tons; Length (extreme), 630 ft.; Norfolk and Dorsetshire, 633 ft. Armament, 8—8-in.; 8—4-in. A.A.; 4—3-pr.; 4—2-pr. Pom Poms; 4 M.; 8 L.; 8—21-in. torpedo tubes; 1 aircraft; 1 catapult.

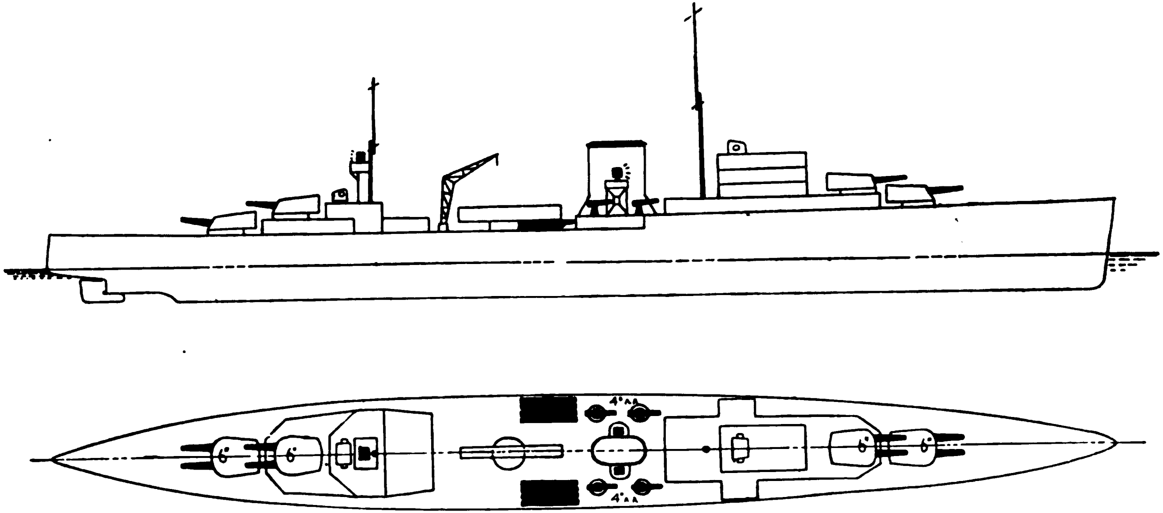
* In Norfolk the seaplane crane and the 4—4-in. guns are slightly forward of the positions shown. Fore topgallant mast added.

GREAT BRITAIN.

CRUISERS.

"*Leander*" *Class.*

Leander. **Achilles.** **Orion.** **Ajax.**



Displacement, 6,985–7,270 tons; Length (extreme), 554 ft. 6 ins.; Speed, 32½ knots. Armament, 8—6-in., 8—4-in. A.A., 4—3-pr. 8 torpedo tubes, 1 catapult; 2 aircraft. Achilles has 4—4-in. AA.

Leander and Achilles are attached to New Zealand division and have 1 aircraft.

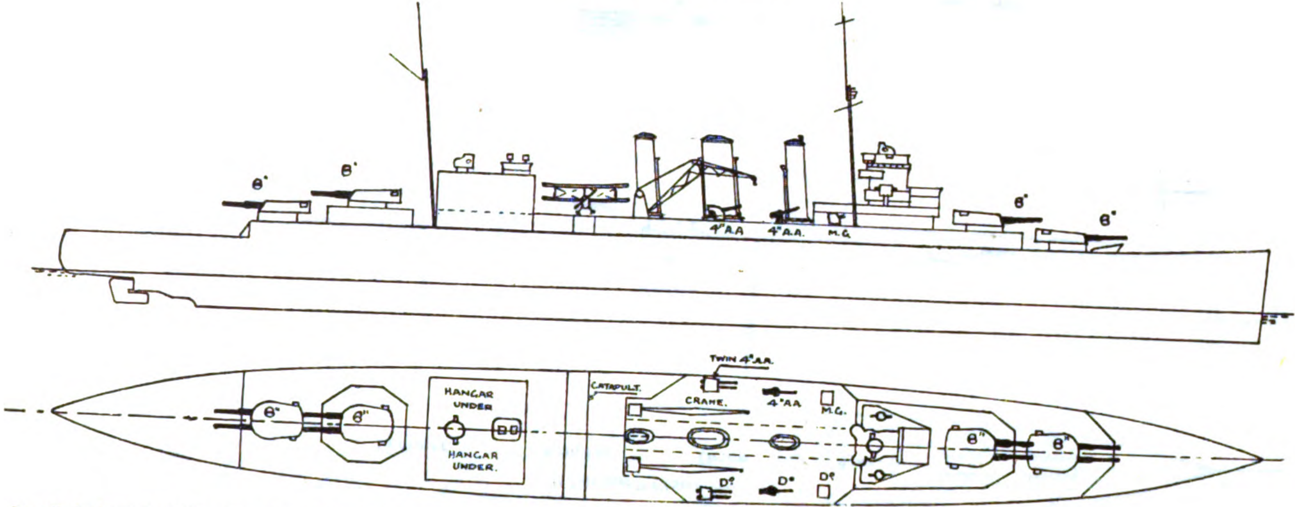
GREAT BRITAIN.

CRUISERS.

"Kent" Class.

Berwick. Kent. Cumberland. Suffolk. Australia.*

(As reconstructed 1936–1938.)



Length (extreme), 630 ft.; 10,000 tons; Speed 31½ knots; Completed 1928. Armament, 8—8-in.; 8—4-in. A.A.; 2 multi-machine guns; 1 catapult; 3 aircraft. Kent, Australia and Canberra have 1 aircraft; Cumberland and Suffolk have 6—4-in. A.A.; Australia and Canberra have 4—4-in. A.A.

NOTES.—Berwick, Kent, Australia and Canberra are flush-decked.

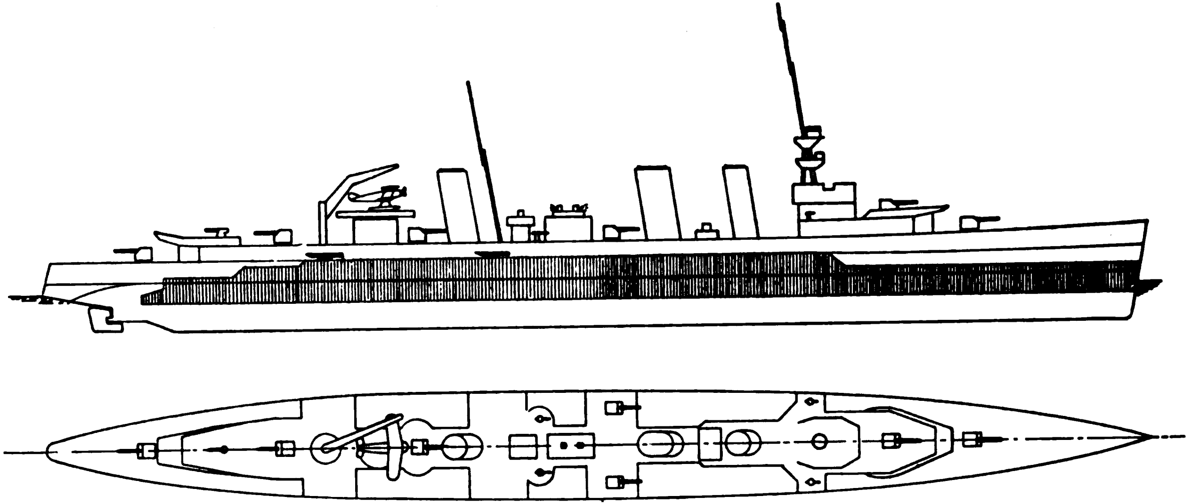
* Royal Australian Navy. Australia is not provided with hangars.

GREAT BRITAIN.

CRUISERS.

"*E*" *Class.*

Emerald. **Enterprise.***



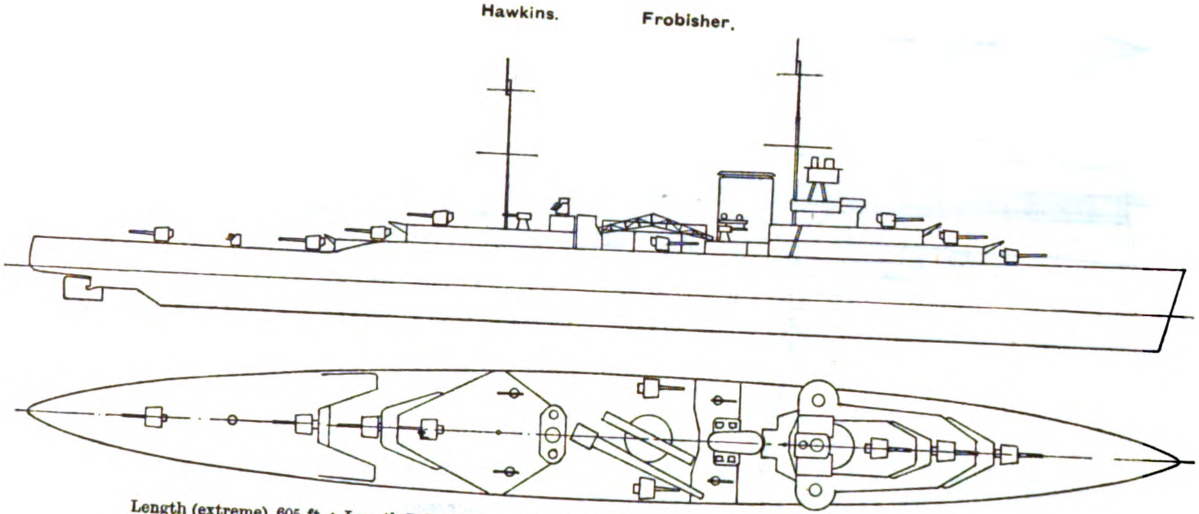
Length (extreme), 570 ft. ; Length B.P., 535 ft. ; Emerald, 7,550 tons ; Enterprise, 7,580 tons ; Speed, 33 knots.
Armament, 7—6-in. ; 3—4-in. A.A. ; 4—3-pr. ; 2—2-pr. Pom Poms ; 2 M. ; 8 L. ; 16—21-in. torpedo tubes ; 1 catapult ; 1 aircraft.

* In Enterprise the two forward 6-in. guns are mounted in a twin mounting on forecastle deck.

GREAT BRITAIN.

CRUISERS.

"*Hawkins*" *Class.*



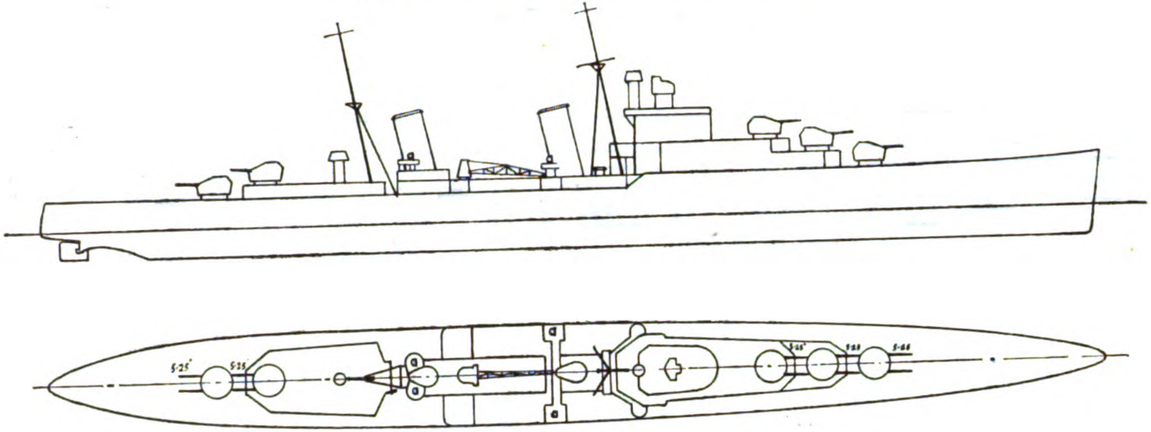
Length (extreme), 605 ft. ; Length B.P., 565 ft. ; 9,550—9,800 tons ; Speed: Hawkins 29½ knots ; Frobisher 30½ knots.
Armament : 9—6-in. ; 4—4-in. A.A. ; 4—3-pr. ; 2—2-pr. ; 2 M. ; 8 L. ; 4 torpedo tubes.

GREAT BRITAIN.

CRUISERS.

"Dido" Class

Cleopatra. **Dido.** **Euryalus.** **Scylla.** **Sirius.**



5,450 tons.

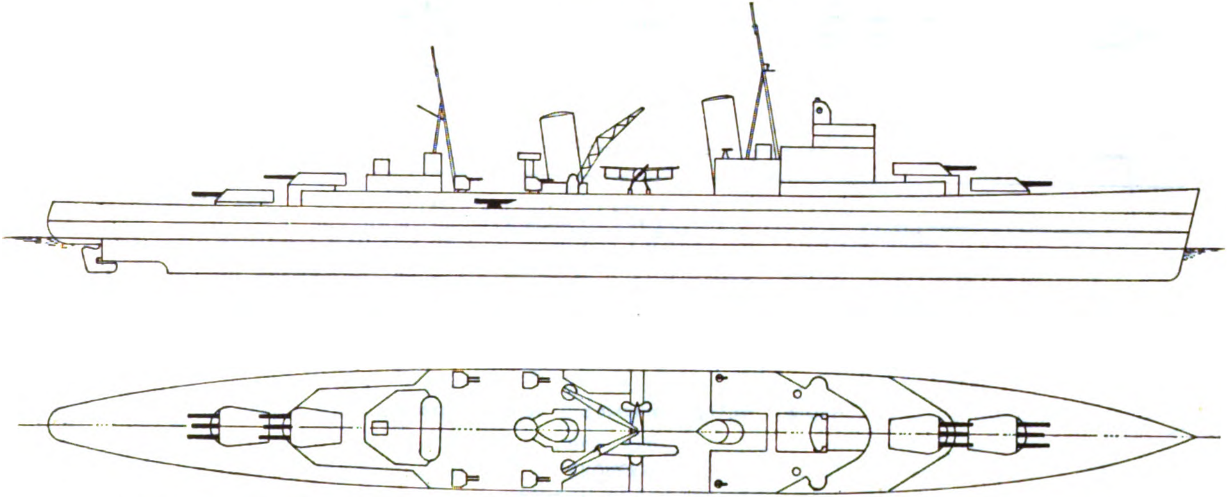
Armament, 10—5·25-in.; 6—21-in. torpedo tubes ; 1 catapult; 1 aircraft.

GREAT BRITAIN.

CRUISERS.

"Southampton" Class.

Newcastle, Sheffield, Birmingham, Glasgow, Liverpool.



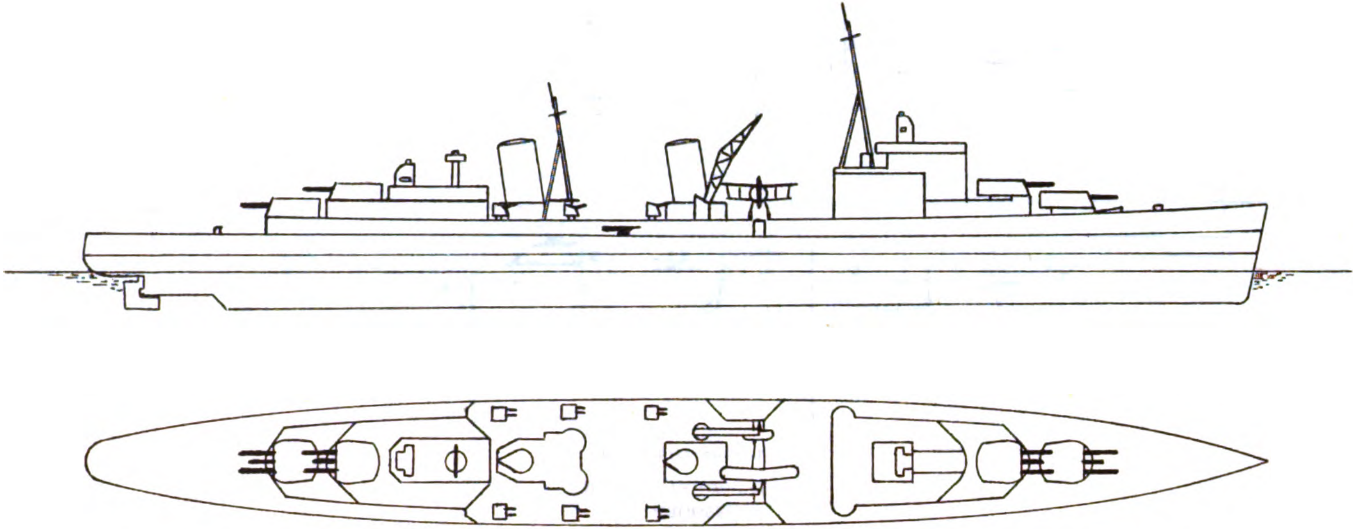
Length (extreme), 591 ft. 6 ins.; 9,100 tons (Liverpool and Manchester 9,400 tons;) Speed, 32 knots; Completed, 1937–38.
Armament, 12—6-in.; 8—4-in. A.A.; 2—2-pr.; 6—21-in. torpedo tubes; 1 catapult; 3 aircraft.

GREAT BRITAIN.

CRUISER.

Improved "Southampton" Class.

Belfast.



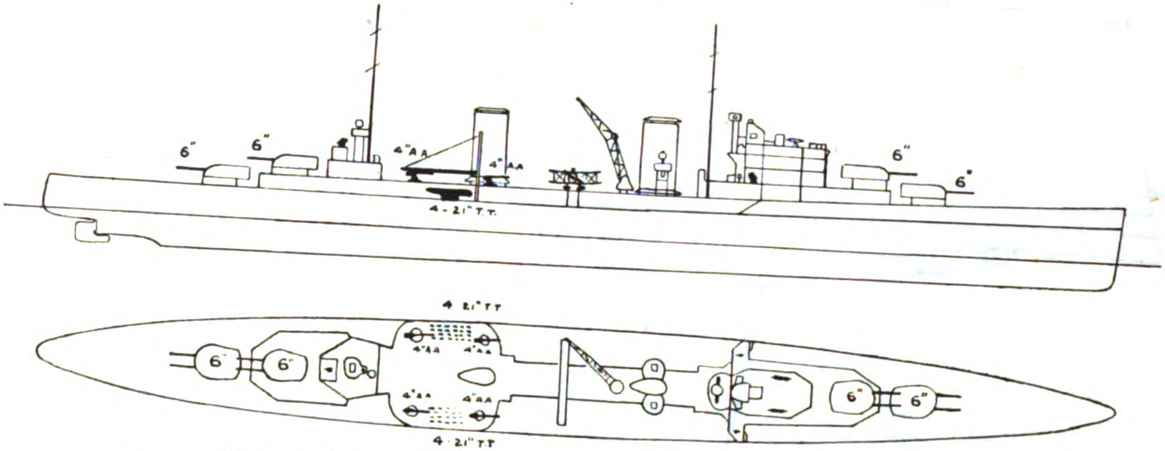
Length extreme), 613 ft. 6 ins.; 10,000 tons; Speed, 32½ knots.
Armament 12—6-in.; 12—4-in. A.A.; 20 smaller guns; 6 torpedo tubes.

COMMONWEALTH OF AUSTRALIA.

CRUISER.

Modified "Leander" Class.

Hobart (*ex*-Apollo).



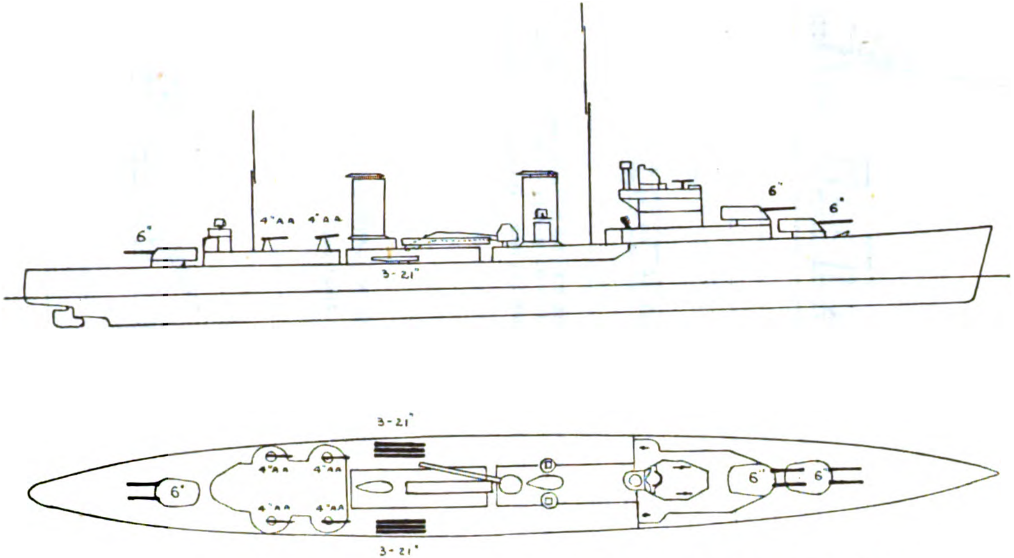
Displacement, 7,000 tons; Length (extreme), 560 ft.; Speed, 32½ knots; Completed, 1936.
Armament, 8—6-in; 8—4-in. A.A.: 18 smaller guns; 4 quadruple 21-in. torpedo tubes; 1 catapult; 2 aircraft

GREAT BRITAIN.

CRUISERS.

"*Arethusa*" *Class.*

Arethusa. **Penelope.** **Aurora.**



Displacement, 5,220–5,270 tons ; Length (extreme), 506 ft. ; Speed, 32¼ knots; Completed 1935–37.
Armament, 6—6-in. ; 4—4-in. A.A. ; 2—3-pr. ; 18 smaller ; 2 triple 21-in. torpedo tubes ; 1 catapult, 1 aircraft.

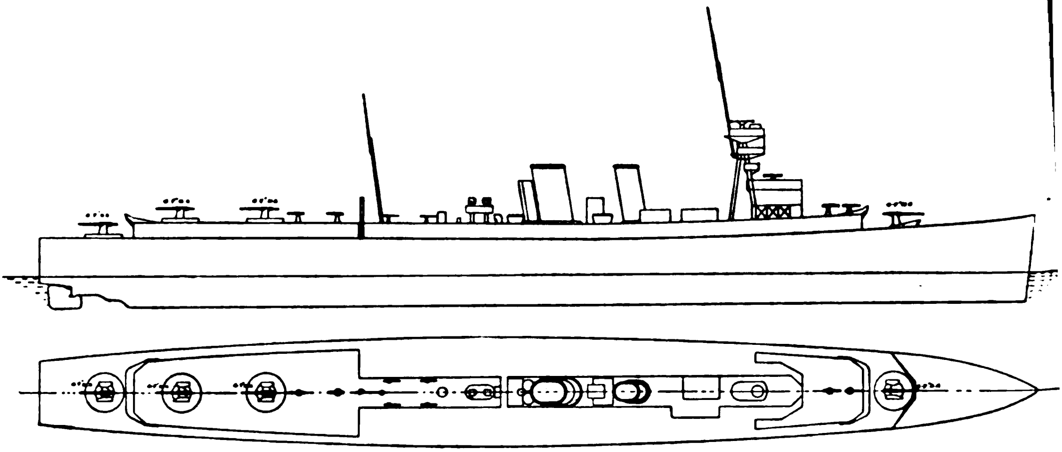
Aurora and Penelope have 4 twin 4-in. A.A. mountings instead of singles.

Derrick fitted on aft side of after funnel.

GREAT BRITAIN.

CRUISER MINELAYER:

Adventure.

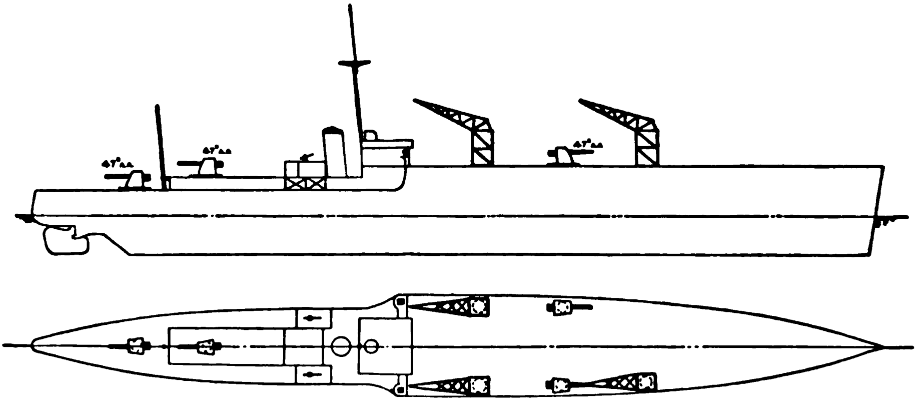


Length (extreme), 539 ft.; Length B.P., 500 ft.; 6,740 tons; Speed, 28 knots.
Armament, 4—4·7-in. A.A.; 4—3-pr.; 4—2-pr.; 2 M.; 8 L.; 310 mines.

Stern has been lengthened and rounded in plan. Derricks added abreast masts.

SEAPLANE CARRIER.

Albatross.



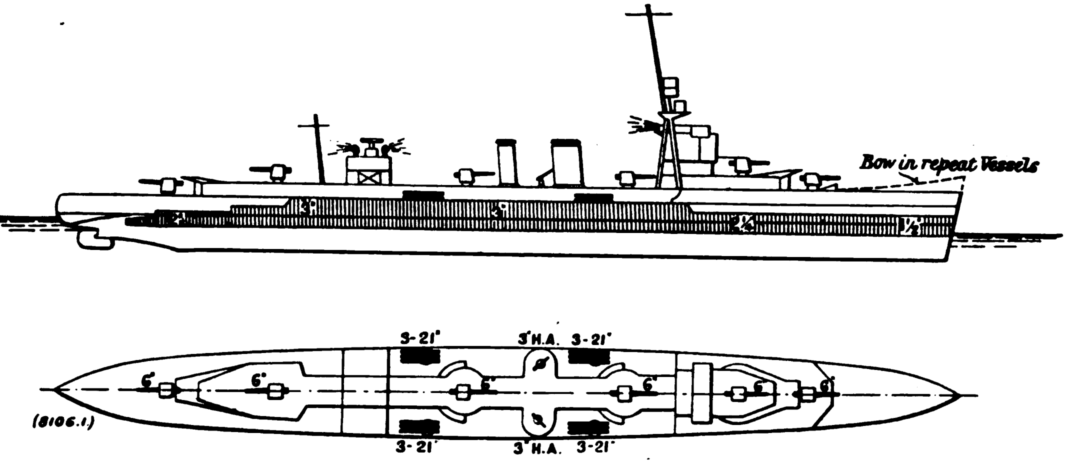
Length, 443¾ ft.; 4,800 tons; Speed, 21 knots; Completed, 1929.
Armament, 4—4·7-in. A.A.; 4—2-pr. Pom Poms; 4—3-pr.; 4 M.; 20 L.; 9 seaplanes.
Catapult fitted forward.

GREAT BRITAIN.

CRUISERS.

"D" Class.

***Despatch.** ***Diomede.** **Danae.** **Dauntless.** ***Delhi.** ***Durban.**



Length, 472½ ft.; 4,850 tons; Speed, 29 knots;
Armament, 6—6-in.; 3—4-in. A.A.; 4—3-pr., 2—2-pr.; 2 M.; 8 L.; 12—21-in. torpedo tubes.

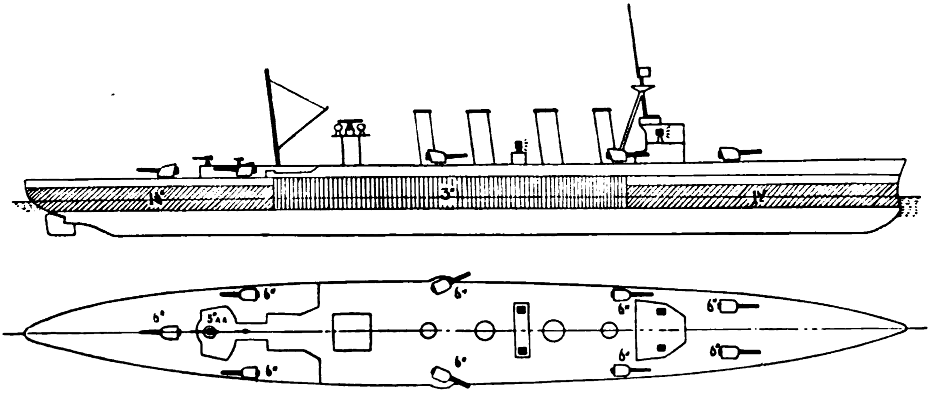
Main topmast fitted. Foremost gun in Diomede housed in gunhouse.

*** Repeat vessels.**

COMMONWEALTH OF AUSTRALIA.

CRUISER.

Adelaide.



Length, 462¾ ft.; 5,100 tons; Speed, 25½ knots.
Armament, 9—6-in.; 4—3-pr.; 1—3-in. A.A.; 8 L.; 2 submerged 21-in. torpedo tubes.
Forward funnel removed and superstructure modified.

GREAT BRITAIN.

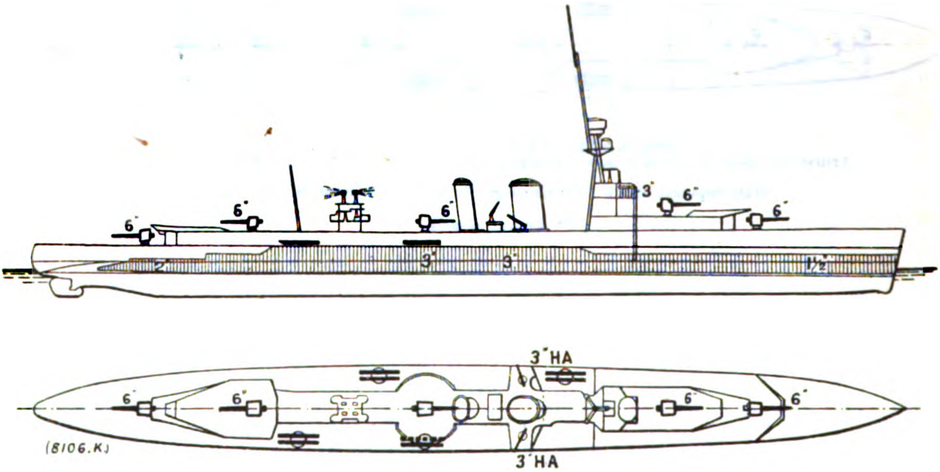
CRUISERS.

"*Ceres*" *Class.*

Ceres. **Curacoa.** **Cardiff.**

"*Carlisle*" *Class.*

Carlisle.



Length (extreme), 450 ft.–451 ft. 9 ins.; Length B.P., 425 ft.; 4,200–4,290 tons; Speed, 29 knots; Completed, 1917–22.

Armament, 5—6-in.; 2—3-in. A.A.; 4—3-pr.; 2—2-pr. Pom Poms; 4 above-water 21-in. D.R. torpedo tubes. Cardiff, Curacoa, and Ceres have 2—3-pr.

Carlisle has a trawler bow.

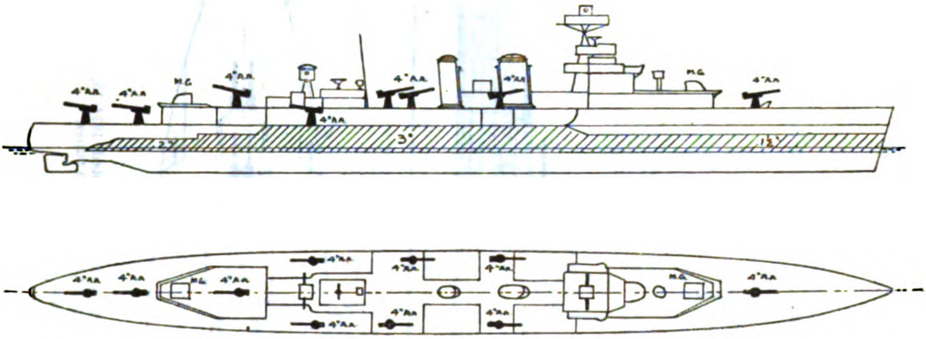
GREAT BRITAIN.

CRUISERS.

"Ceres" Class.

Capetown and Colombo when completed.

Anti-Aircraft gun ships.

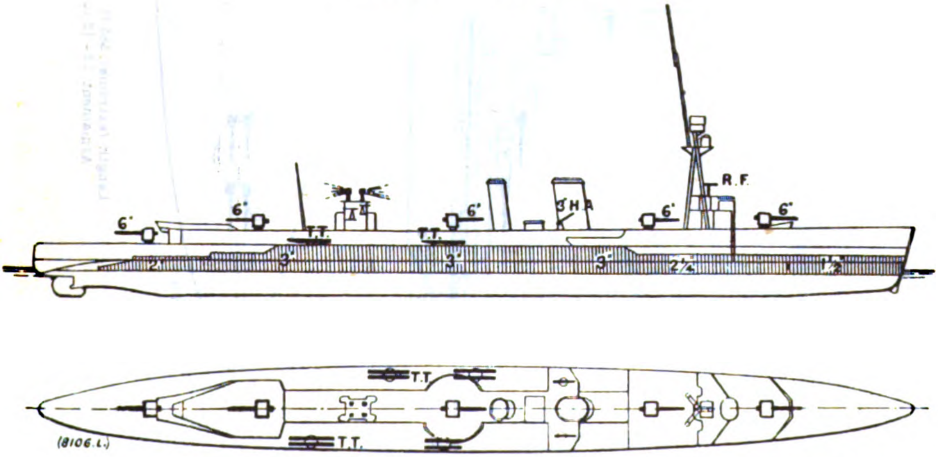


Length (extreme), 450 ft. ; 4,290 tons ; Speed, 29 knots ; Completed, 1917.
Armament, 10—4-in. A.A. ; 2—3-pr. ; 2 multi-machine guns ; 2 M.G. ; 8 L. ; 8—21-in. torpedo tubes.

CRUISERS.

"Caledon" Class.

Caledon. **Caradoc.**

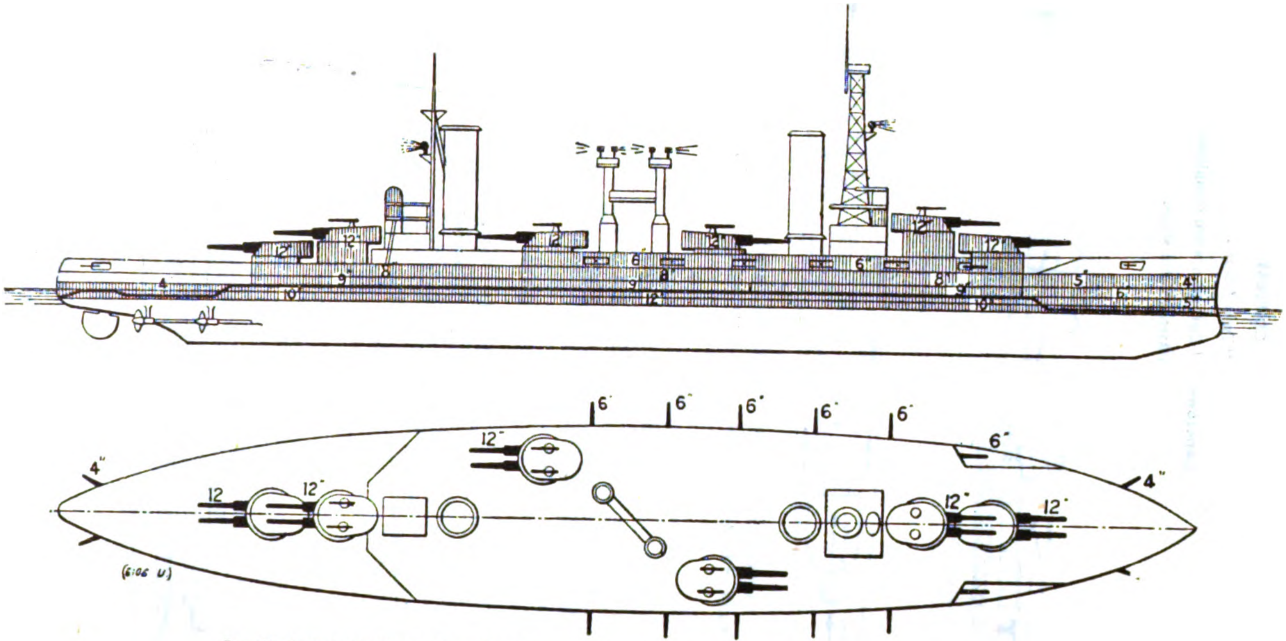


Length (extreme), 450 ft. ; Length B.P., 425 ft. ; 4,180 tons ; Speed, 29 knots ; Completed, 1917.
Armament, 5—6-in. ; 2—3-in. A.A. ; 4—3-pr. ; 2—2-pr. Pom Poms ; 2 M. ; 8 L. ; and 4 above-water 21-in. D.R. torpedo tubes.
Mainmast lengthened.

ARGENTINA.

BATTLESHIPS

Moreno. **Rivadavia.**



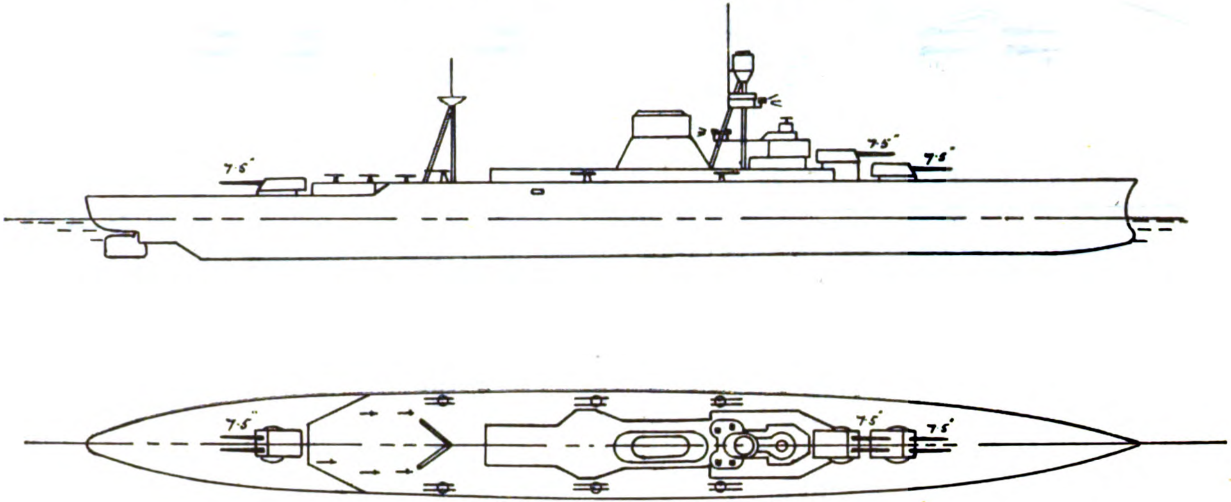
Length (extreme), 585 ft. ; Length on W.L., 575 ft. ; 27.940 tons ; Speed, 22¼ knots ; Completed, 1914-15.
Armament, 12—12-in. ; 12—6-in. ; 4—3-in. A.A. ; 6 M. ; 4 L. ; 2 submerged 21-in. torpedo tubes.

Guns on B and X turrets replaced by rangefinders.

ARGENTINA.

CRUISERS.

Almirante Brown. Vinticinco de Mayo.



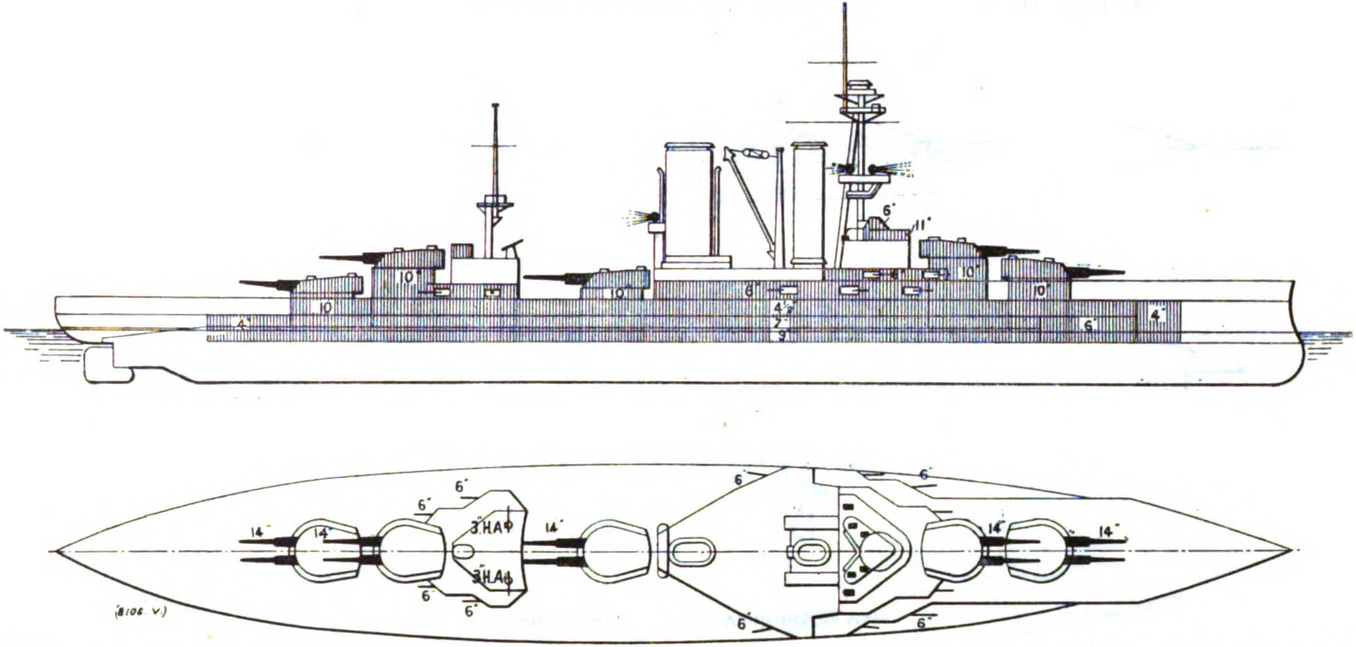
Length (extreme), 545½ ft.; 6,495 tons; Speed, 32 knots. Completed, 1931.
Armament, 6—7·5-in.; 12—4-in. A.A.; 6 Pom Poms; 6—21-in. torpedo tubes;
1 catapult; 2 seaplanes.

Corrections to plan.—Fore topmast shortened. Main topmast lengthened. Derrick fitted on **fore side of mainmast.**
Searchlight fitted on mainmast. Superstructure built aft side of mainmast.

CHILE.

BATTLESHIP.

Almirante Latorre (*formerly* H.M.S. Canada).



Length (extreme), 661 ft. ; Length B.P., 625 ft. ; Standard Displacement, 28,950 tons ; Speed, 23 knots ; Completed, 1915 ; Modernised at Devonport Dockyard, 1929–31.*
Armament, 10—14-in. ; 14—6-in. ; 4—3-pr. ; 4 submerged 21-in. torpedo tubes ; 1 catapult.

* During modernisation main topmast has been raised and bridge platforms extended.

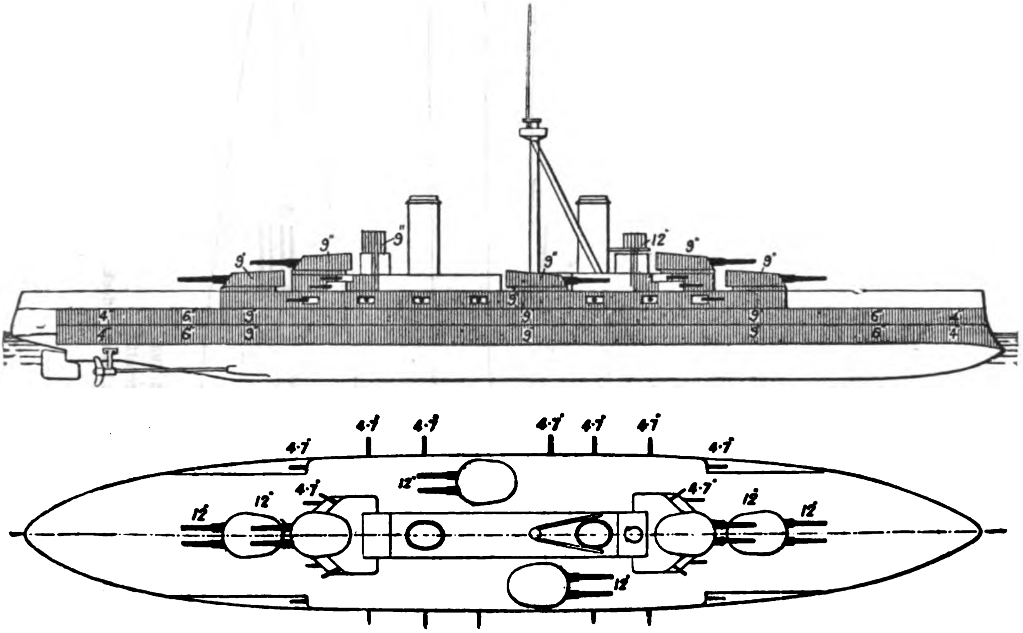
Four 4-in. A.A. have been added.

Catapult fitted on quarter deck.

BRAZIL.

BATTLESHIPS.

Minas Geraes. **São Paulo.**

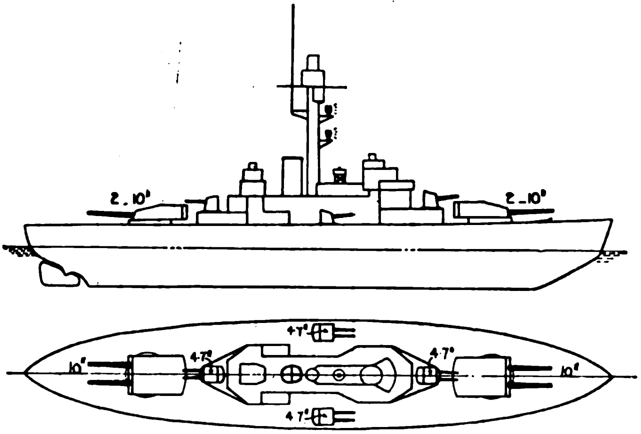


Length (extreme), 543 ft.; Length B.P., 500 ft.; 19,200 tons; Speed, 21 knots; Completed, 1909, 1910.
Armament, 14—12-in.; 14—4·7-in.; 2—3-pr.; 4—3-in. A.A.; 8 M. A.A.
Overhauled and refitted at Brooklyn Navy Yard, 1921-23, and A.A. guns installed.
Corrections to plan.—Ten main deck 4·7-in. guns removed in 1931.
Forward funnel removed, bridgework modified; 4·7-in. guns and 3-in. A.A. guns added.
Polemast and rangefinder fitted abaft funnel.

FINLAND.

ARMOURED GUNBOATS.

Väinämöinen. **Ilmarinen.**

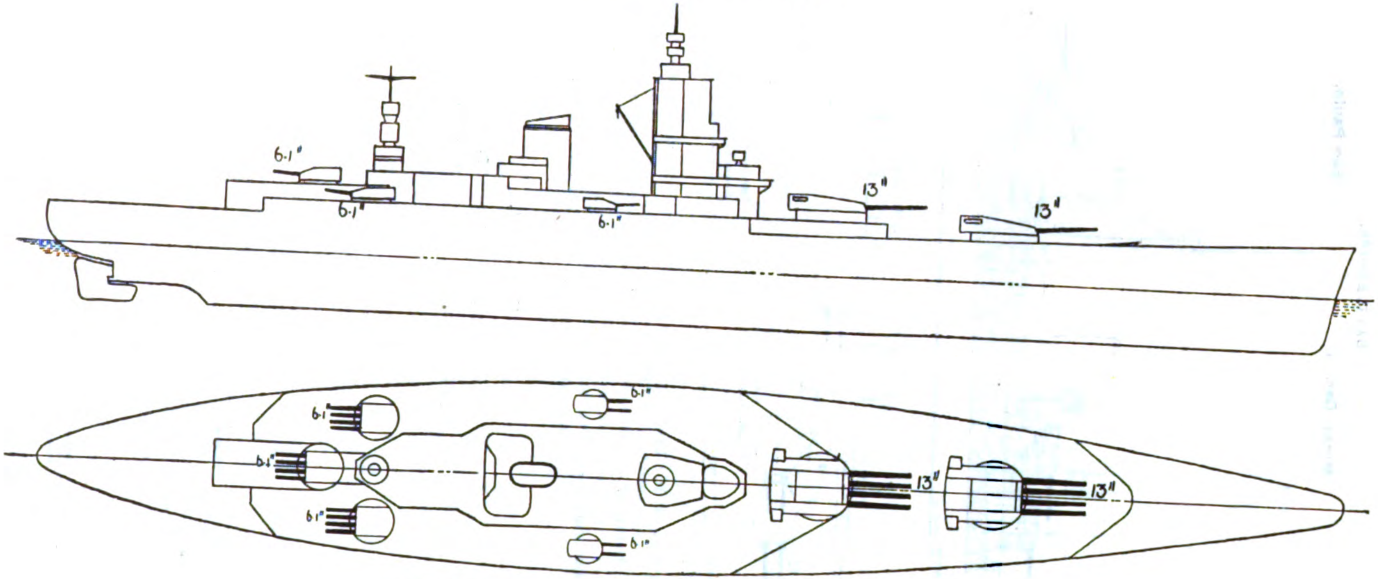


Length, 305 ft.; 3,900 tons; Speed, 15 knots.
Armament, 4—10-in.; 8—4-in.
Completed, 1932—33.

FRANCE.

BATTLESHIPS.

Dunkerque. **Strasbourg.**

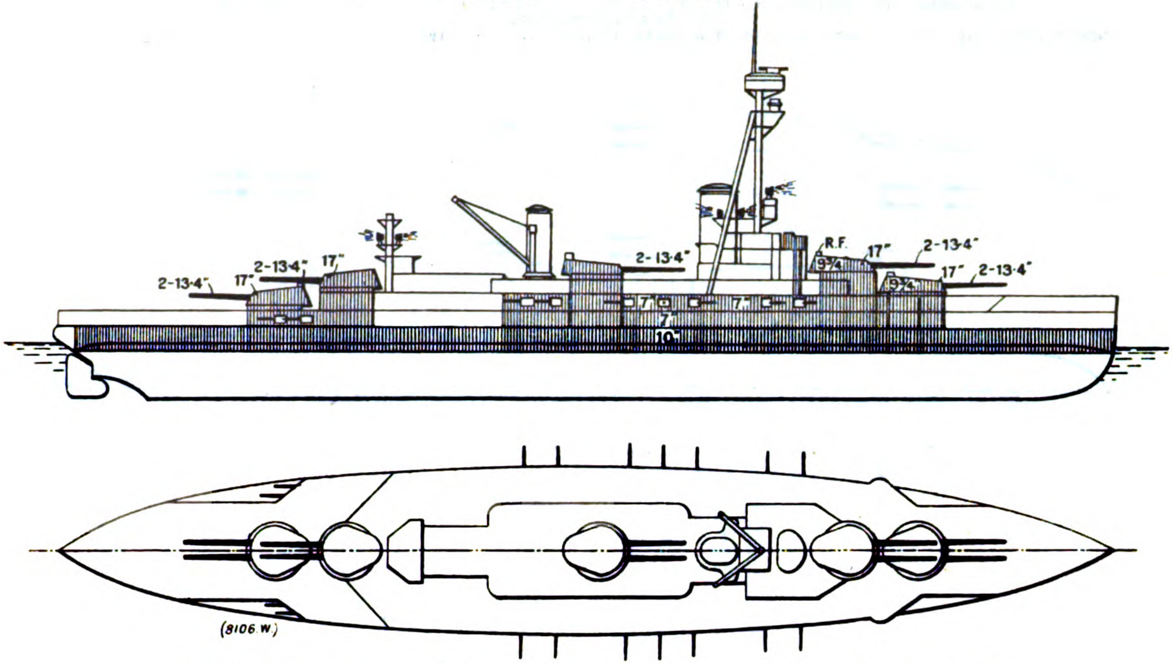


Length, 706 ft.; 26,500 tons; Speed, about 29 knots. Completed, 1936.
Armament, 8—13-in.; 16—5·1-in., 40 smaller; 1 catapult; 4 aircraft.
Catapult fitted on quarter deck at M.L., and crane fitted on port side at break of deck.

FRANCE.

BATTLESHIPS.

Lorraine. Provence.



Length (extreme), 544 ft. 6 ins.; 22,189 tons; Speed, 21 knots; Completed, 1915–16; Modernised, 1925–27.
Converted to oil burning, 1931.
Armament, 10—13·4-in.; 14—5·4-in.; 8—3-in. A.A.; 5—3-pr.; 2—1-pr.; 4 submerged 18-in. torpedo tubes. 4 seaplanes. 1 catapult.

Correction to plan.—The ships have now tall main topmasts and no fore topmasts.

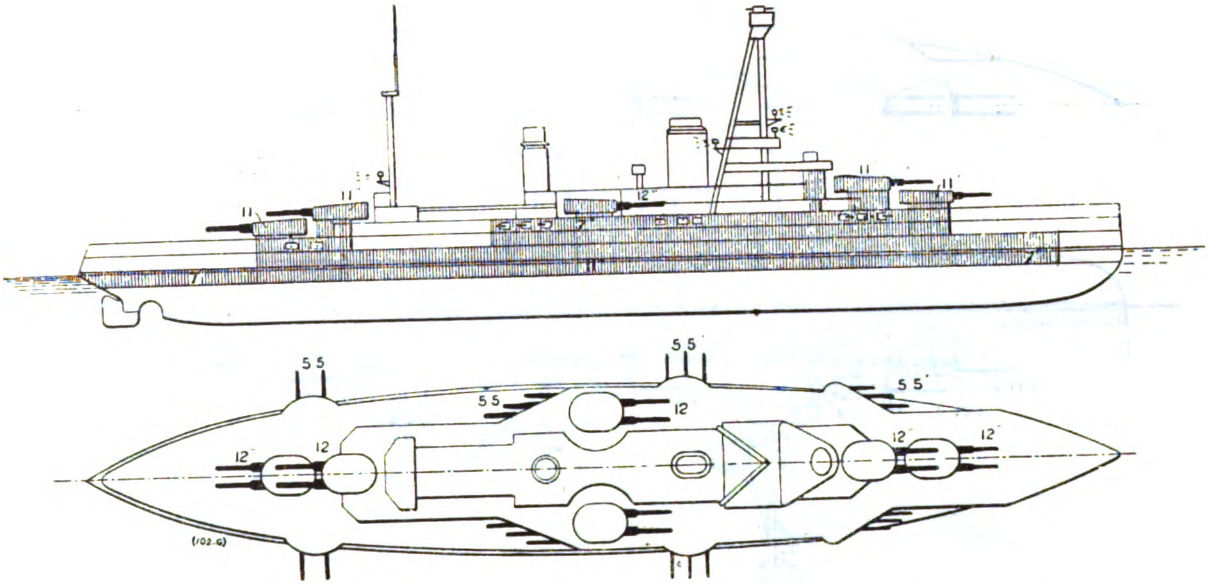
NOTE.—Lorraine has been reconstructed. The midships turret has been removed and a hangar fitted in its place. Machinery is modernised and speed increased. Improved protection is fitted. 8—3·9-in. A.A. fitted in lieu of 3-in. A.A.'s. 2—13·4-in. guns removed.

Cranes fitted abreast funnel. Bridgework extended.

FRANCE.

BATTLESHIPS.

Courbet. **Paris.**



Length (extreme), 551 ft. ; Length B.P., 541 ft. 4 ins. : 22,189 tons ; Speed, 20 knots ; Completed, 1913–14. Modernised in 1929. Converted to oil burning, 1931.

Armament, 12—12-in. ; 22—5·4-in. ; 7—3-in. A.A. ; 2—3-pr. ; 2—1-pr. ; 4 submerged 18-in. torpedo tubes.

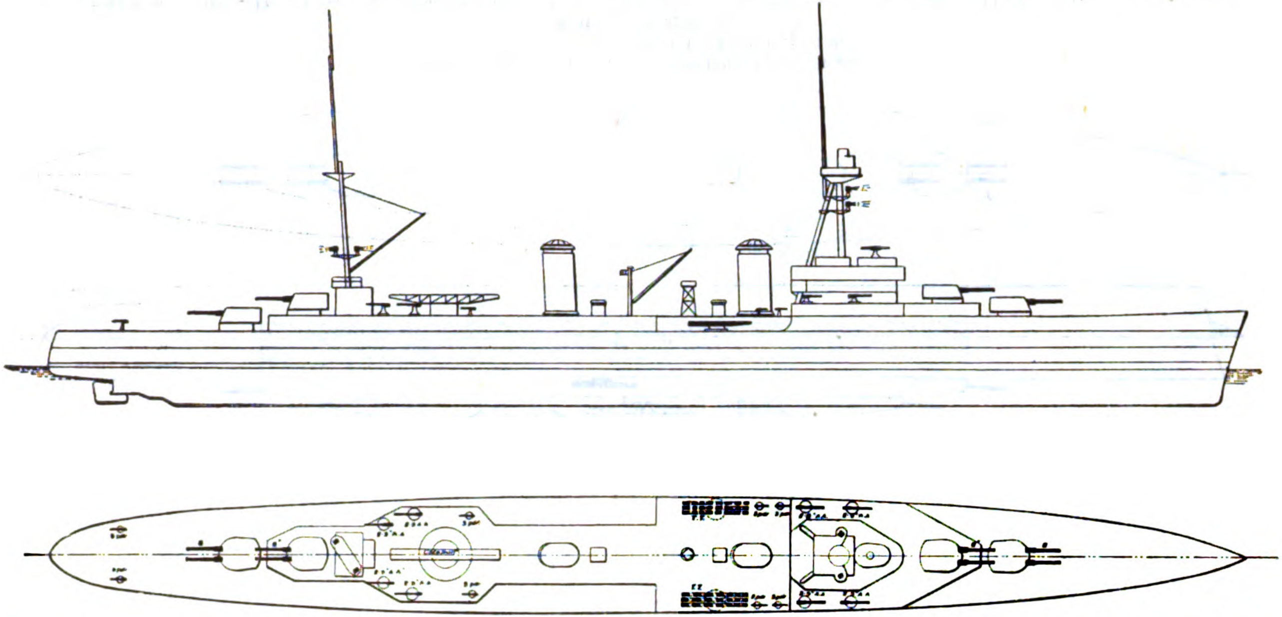
Corrections to plan.—Cranes fitted abreast after funnel. After funnel reduced in height. Range-finder fitted on B turret

Courbet and Paris are under the control of the Free French.

FRANCE.

CRUISERS.

Duquesne. **Tourville.** (*"Duquesne" Class.*) **Suffren.** **Colbert.** **Foch.** **Dupleix.** (*"Suffren" Class.*)



Length (between perpendiculars), 607 ft. (Duquesne and Tourville (extreme), 626 ft. 8 ins.); 10,000 tons; Speed, 32 knots (Duquesne and Tourville, 33·2 knots).

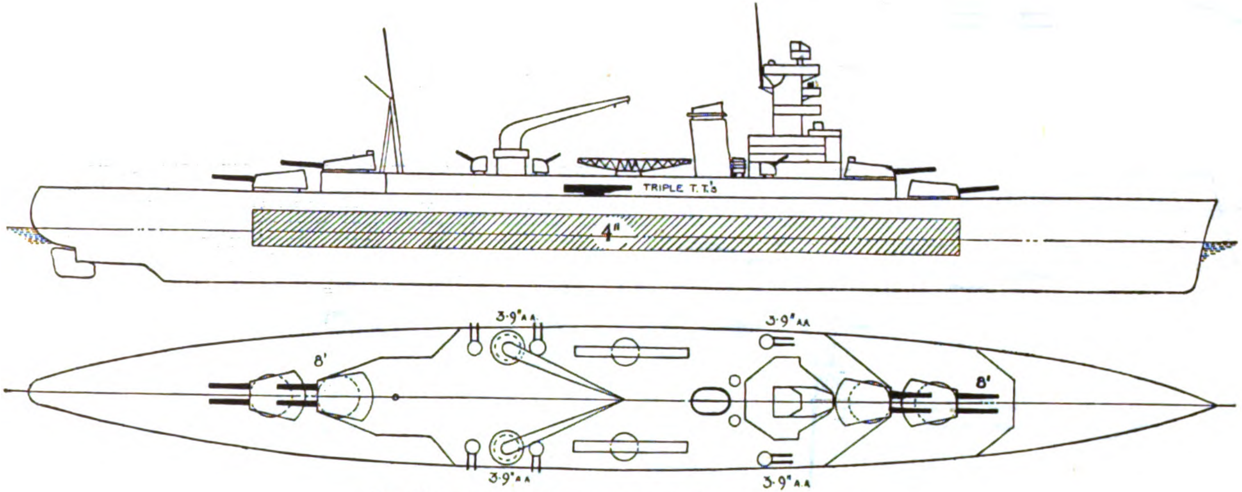
Armament, 8—8-in., 8—3-in. A.A. (Dupleix, Colbert and Foch have 8—3·5-in. A.A.); 8—1-pr.; 2—triple 21-in. T.T.'s. 2–3 seaplanes.

The above plan is for Duquesne and Tourville. The others differ slightly from this in details of bridges, cranes, catapults, etc. Suffren has 2 catapults in the position shown above. Colbert, Dupleix and Foch have tripod mainmasts, 2 catapults between the funnels and the two cranes abreast the after funnel; fore topmasts removed in Dupleix and Colbert, and shortened in Duquesne, Tourville and Foch.

FRANCE.

CRUISER.

Algérie.



Length (extreme), 610 ft. 3 ins.; 10,000 tons; Speed, 31 knots.
Armament, 8—8-in.; 12—3·9-in. A.A.; 8—1·5-in.; 16 M.
1 catapult; 2 seaplanes.

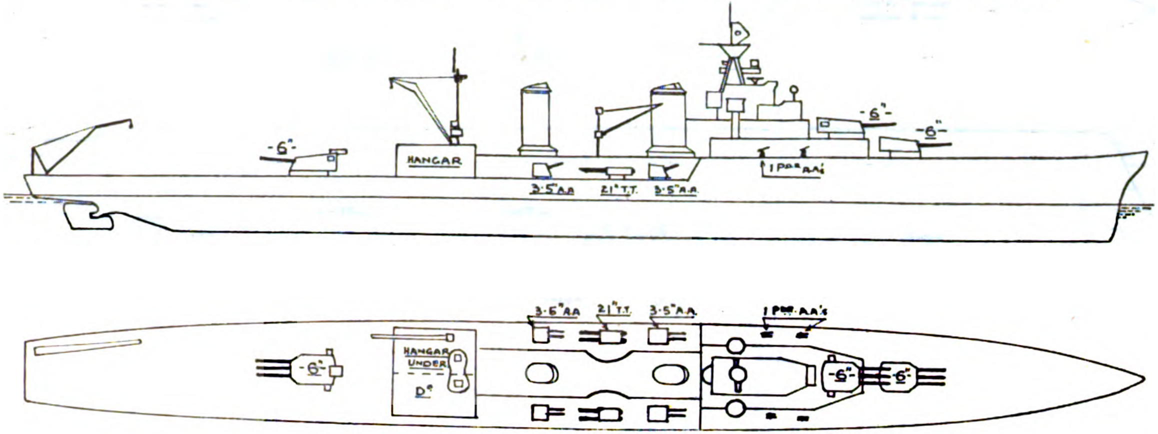
Correction to plan.—The aircraft cranes are not sided as shown, but lie fore and aft from a structure on the middle line between funnel and mainmast.

Superstructure amidships modified and two cranes fitted.

FRANCE.

CRUISERS.

Jean-de-Vienne. La Galissonnière. Marseillaise. Gloire. Montcalm. Georges Leygues.



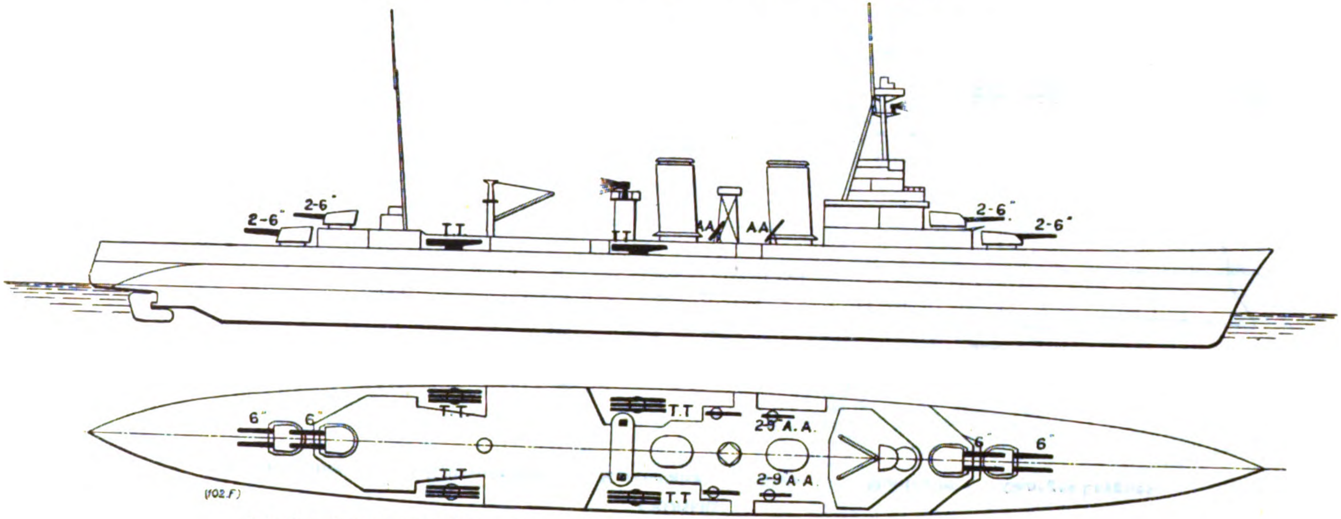
Length (extreme), 589 ft.; 7,600 tons; Completed, 1935–37; Speed, 31 knots.
Armament, 9—6-in.; 8—3·5-in. A.A.; 8—·5 in. A.A.; 4—21·7-in. torpedo tubes; 4 seaplanes; 1 catapult.
Fitted with Hein landing canvas at the stern. Catapult fitted on after turret.

FRANCE.

CRUISERS.

"Duguay-Trouin" Class.

La Motte Picquet. **Duguay-Trouin.** **Primauguet.**



Length (extreme), 594 ft. 10 ins.; Length B.P., 575 ft.; 7,249 tons; Speed, 34 knots. Completed, 1926–27.
Armament, 8—6·1-in.; 4—3-in. A.A.; 2—3-pr.; 4 M.; 1 L.; 4 triple torpedo tubes (21·7-in. torpedoes); 1 catapult; 1 seaplane.

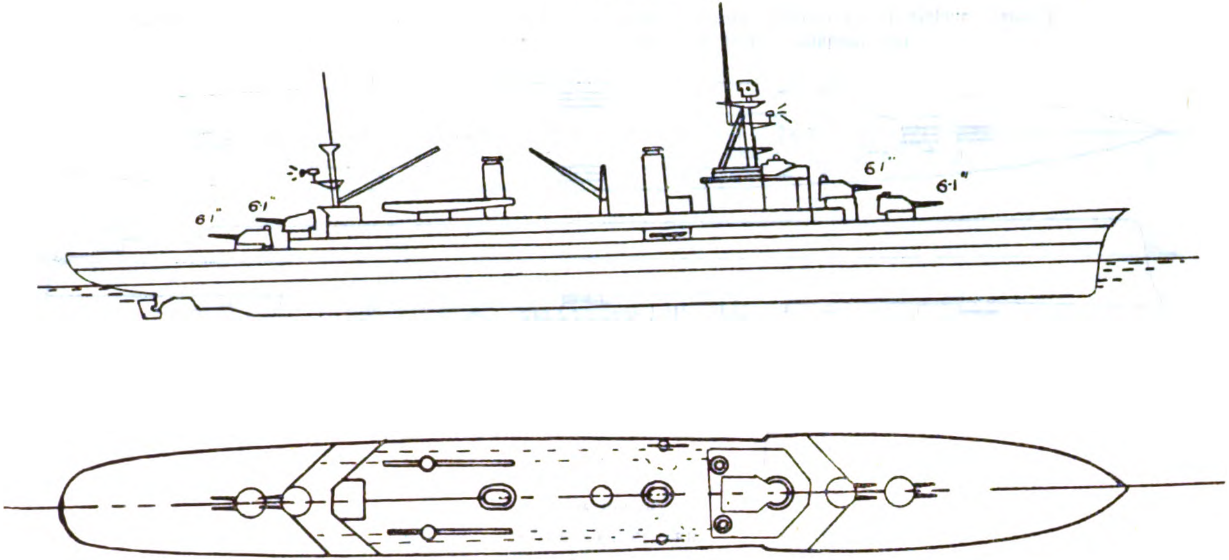
NOTE.—Reported to have protection to magazines.

Correction to plan.—Catapult is fitted on quarter deck.
Fore topmast removed and masthead modified.

FRANCE.

TRAINING CRUISER.

Jeanne d'Arc.



Length (extreme), 557 ft. 8 ins.; 6,496 tons; Speed, 26 knots; Completed, 1931.

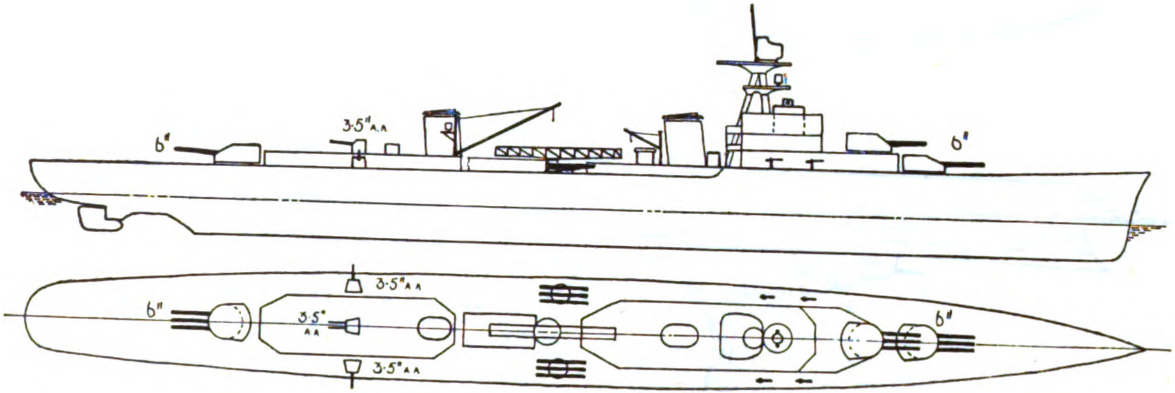
Armament, 8—6·1-in.; 4—3-in. A.A.; 2—1·5-in.; 2 M.; 2—21·7-in. torpedo tubes; 2 seaplanes.

Correction to plan.—The catapults and fore topmast have been removed.

FRANCE.

CRUISER MINELAYER.

Emilé Bertin.

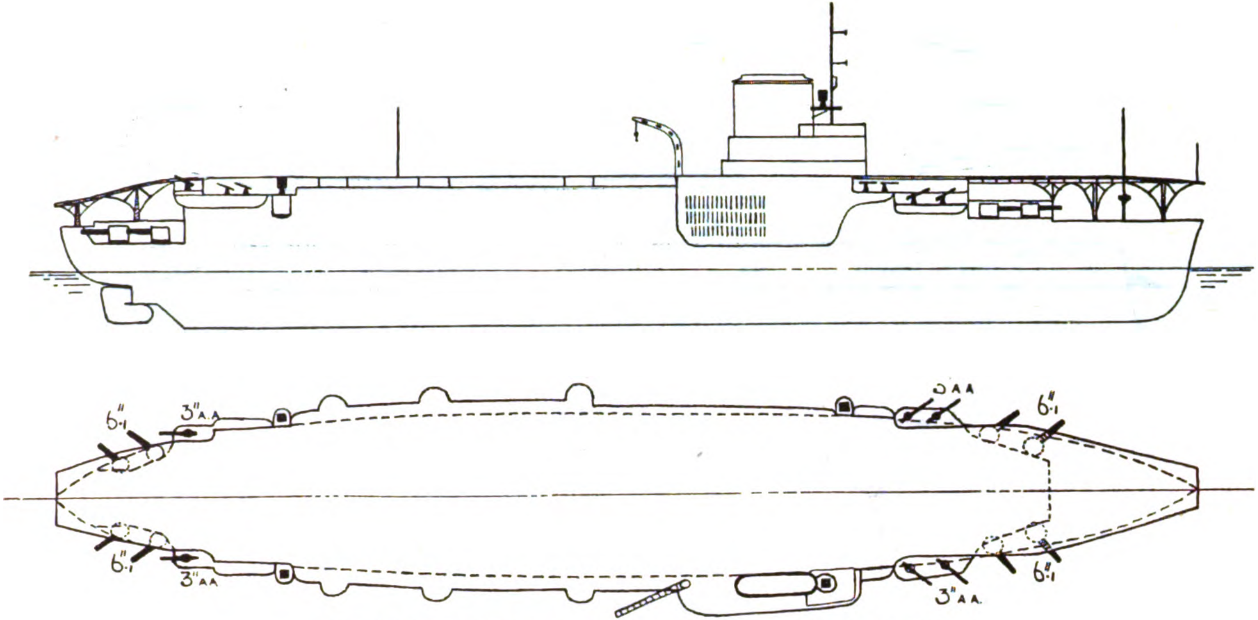


Length (extreme), 580 ft. 9 ins. ; 5,886 tons ; Speed, 34 knots. Completed, 1934.
Armament, 9—6-in. ; 4—3·5-in. A.A. ; 4—1·5 A.A. ; 8 M. ; 200 mines ; 6—21·7-in. torpedo tubes ; 1 catapult ; 2 aircraft.
Correction to plan.—Small pole mast fitted on fore side of after turret.

FRANCE.

AIRCRAFT CARRIER.

Béarn.



Length (extreme), 599 ft.; 22,146 tons; Speed, 21·5 knots; Completed, 1923.

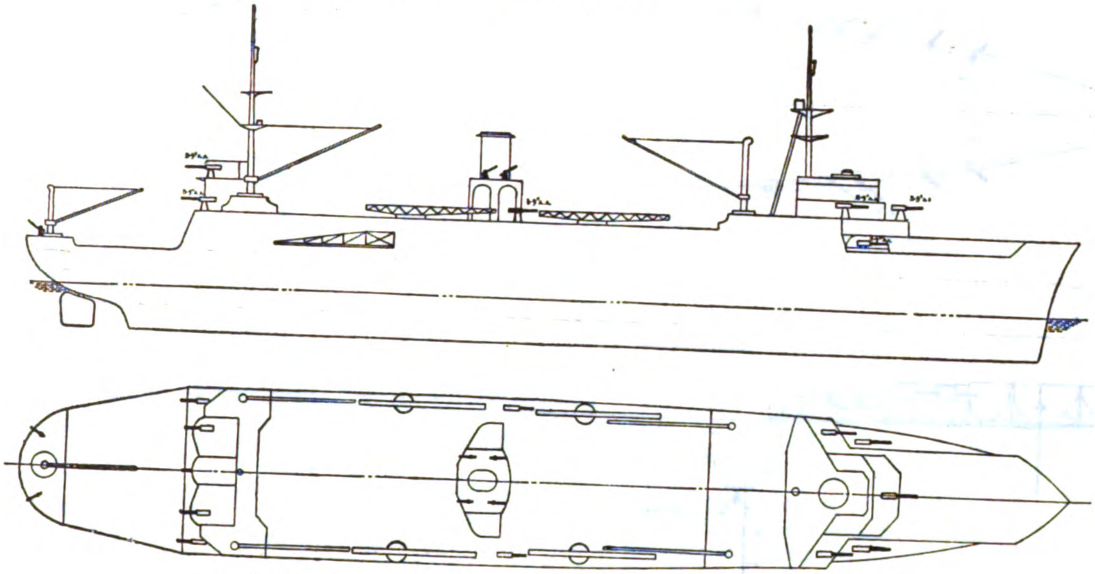
Armament, 8—6·1-in.; 6—3 in. A.A.; 8—1-pr. A.A.; 12 M. A.A.; 4—21·7-in. torpedo tubes: 41 planes.

Correction to plan.—Space between flight deck forward and upper deck partially blanked off. Framework fitted to after-side of funnel.

FRANCE.

AVIATION TRANSPORT.

Commandant Teste.

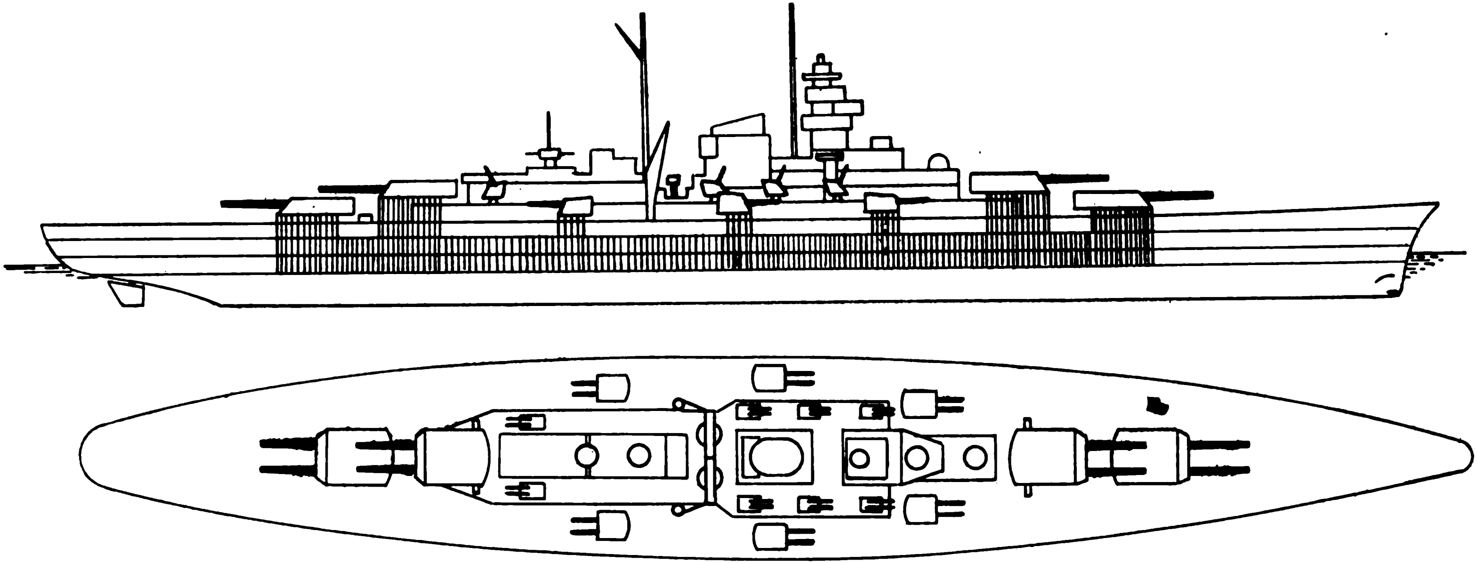


Length (extreme), 548 ft.; 10,000 tons Speed, 20½ knots; Completed, 1932.
Armament, 12—3·9-in. A.A.; 8—3-pr. A.A.; 12 M.; 19 planes.

GERMANY.

BATTLESHIP.

Tirpitz.

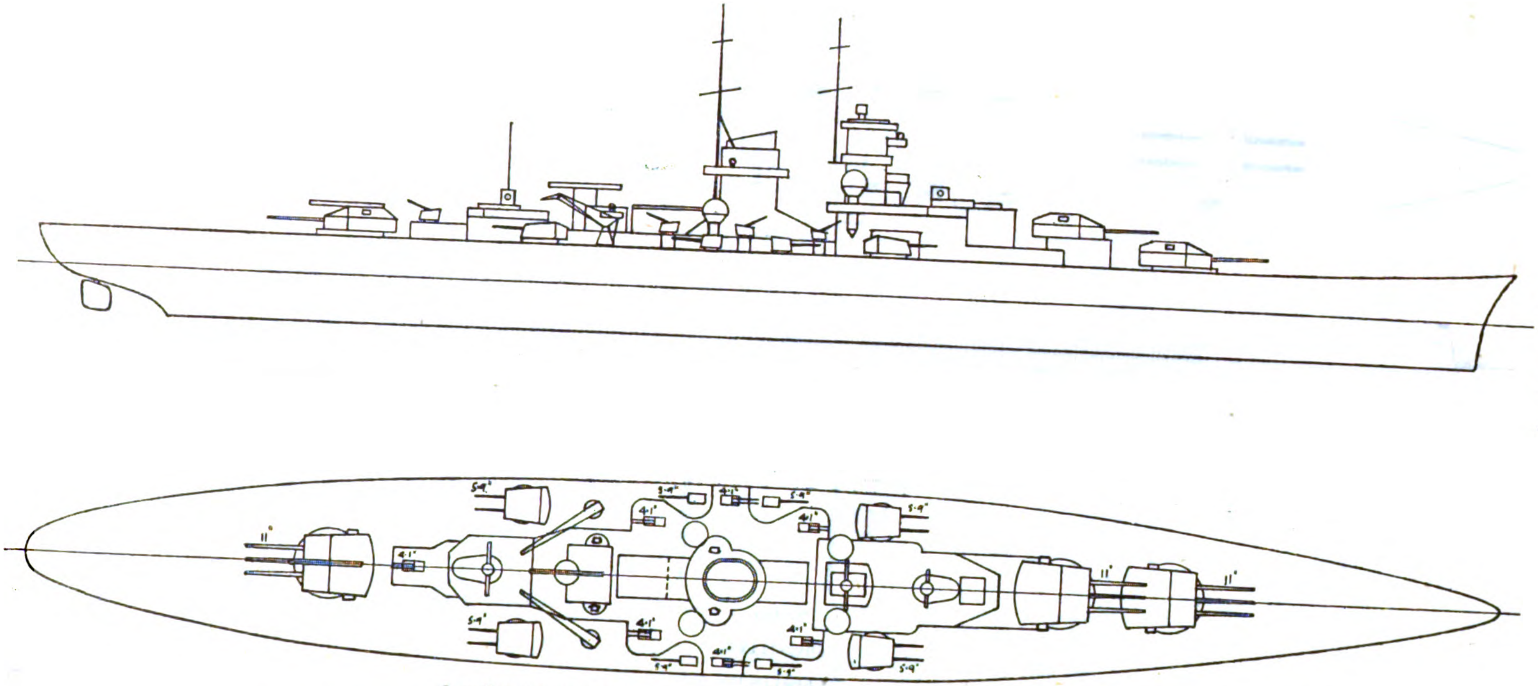


Length (on W.L.), 792 ft. 6 ins.; 40,000 tons; speed about 28 knots; completed 1941.
Armament, 8—15 in.; 12—5·9 in.; 16—4·1 in. A.A.; 4 seaplanes; 2 catapults.

GERMANY.

BATTLE CRUISER.

Gneisenau.

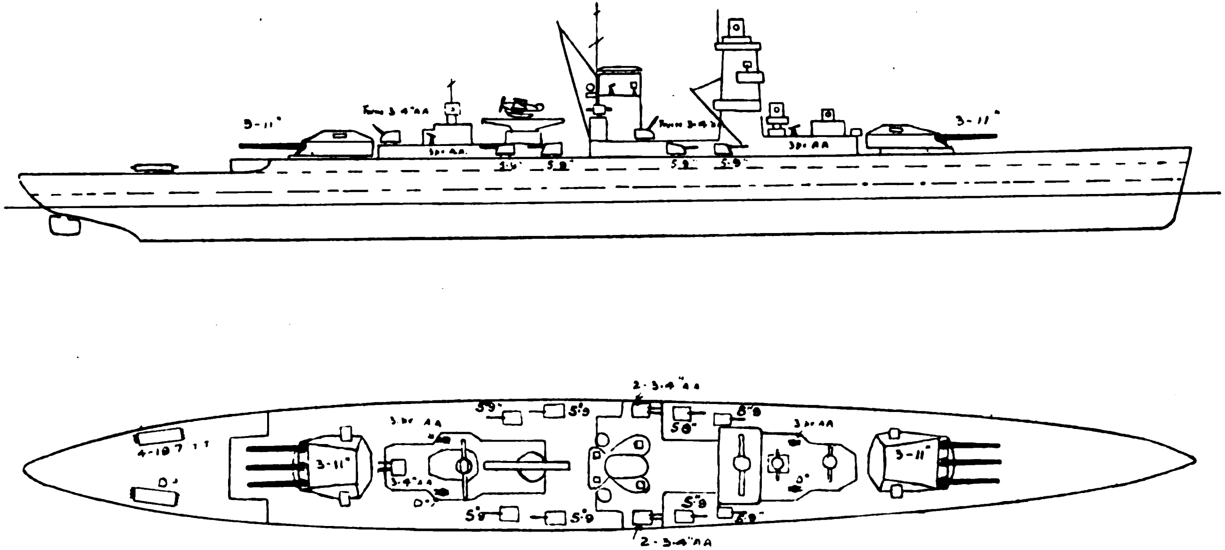


Length (extreme), 741 ft. 6 ins.; 26,000 tons; 27 knots; Completed 1938–39.
Armament, 9—11-in.; 12—5·9-in (4 twin turrets, 4 single mountings); 14—4·1-in. A.A.; 16—1·5-in. A.A.; 4 aircraft; 2 catapults.

GERMANY.

ARMOURED SHIP.

Admiral Scheer.

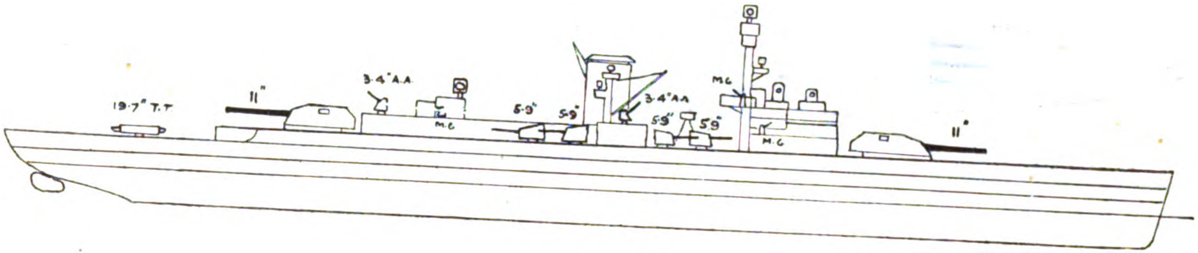


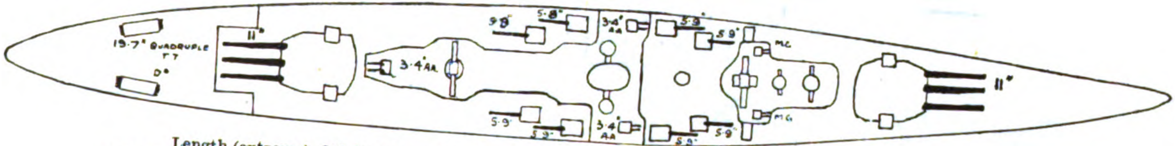
Length (extreme), 609 ft. 3 ins.; Standard displacement, 10,000 tons; Speed, 26 knots.
Armament, 6—11-in.; 8—5·9-in.; 6—4·1-in. A.A.; 8—1·5-in. A.A.; 10 M.G.; 8—21-in. torpedo tubes; 1 catapult; 2 aircraft.
Completed, 1934.

GERMANY.

ARMOURED SHIP.

Lutzow (ex-Deutschland.)



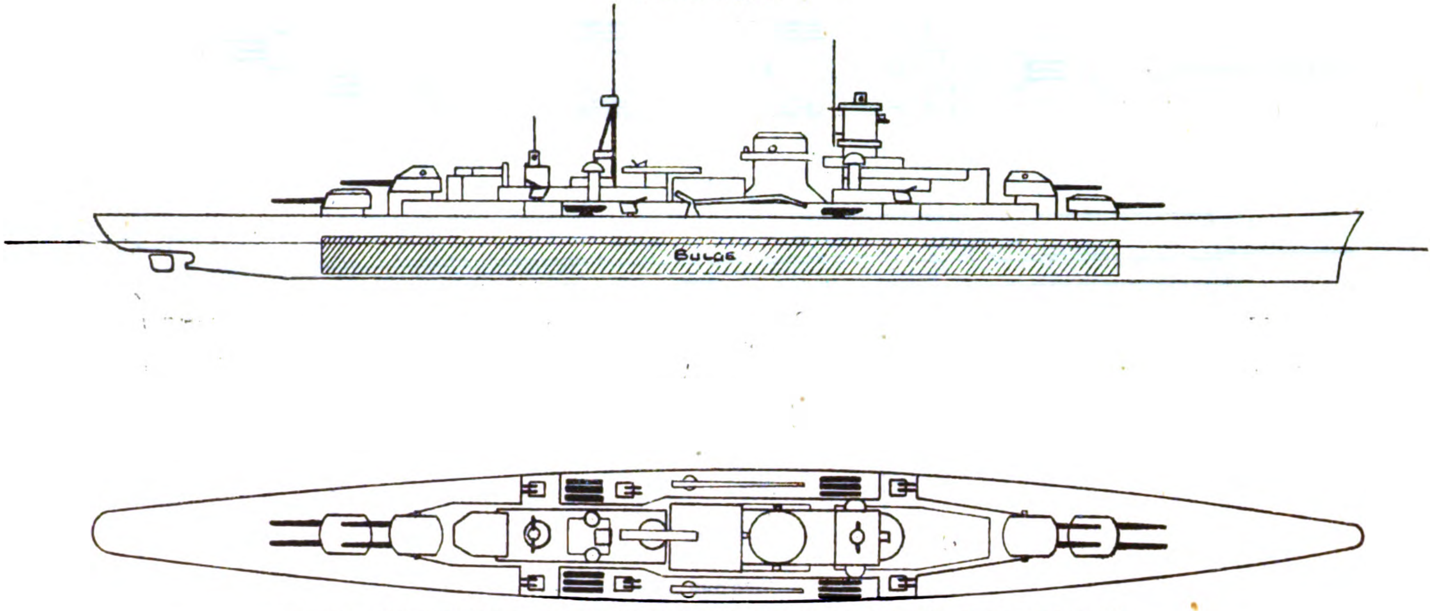


Length (extreme), 609 ft. 3 ins.; Standard displacement, 10,000 tons; Speed, 26 knots; Completed, 1933. Armament, 6—11-in.; 8—5·9-in.; 6—4·1-in. A.A.: 8—1·5-in. A.A.; 10 M.G.; 8—21-in. torpedo tubes: 1 catapult; 2 aircraft. Pole mainmast fitted on aft side of funnel. Catapult fitted abaft funnel. Fore topmast fitted. Pole mast fitted on after superstructure. Cranes fitted in lieu of derricks on port side of funnel.

GERMANY.

CRUISER.

Admiral Hipper.

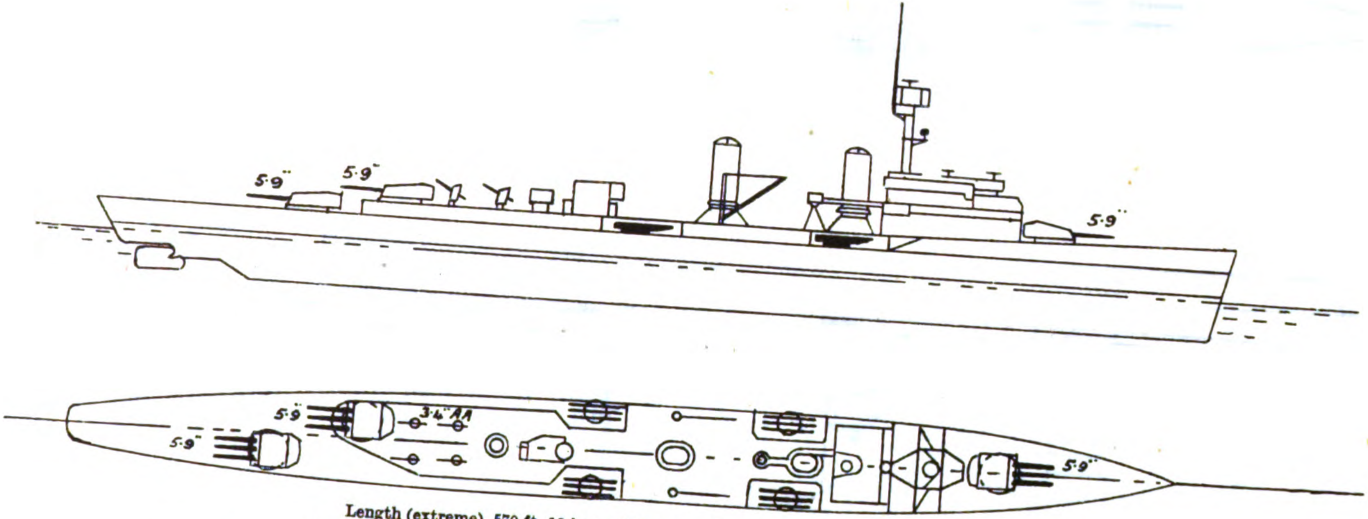


Length (on W.L.), 639 ft. 9 ins. : Standard displacement, 10,000 tons ; Speed, 32 knots : Completed, 1939.
Armament, 8—8 in. ; 12—4·1 in. A.A. ; 12—1·45 A.A. ; 12—21-in. torpedo tubes ; 1 catapult ; 3 aircraft.
Stem is upright.

GERMANY.

LIGHT CRUISER.

Köln.

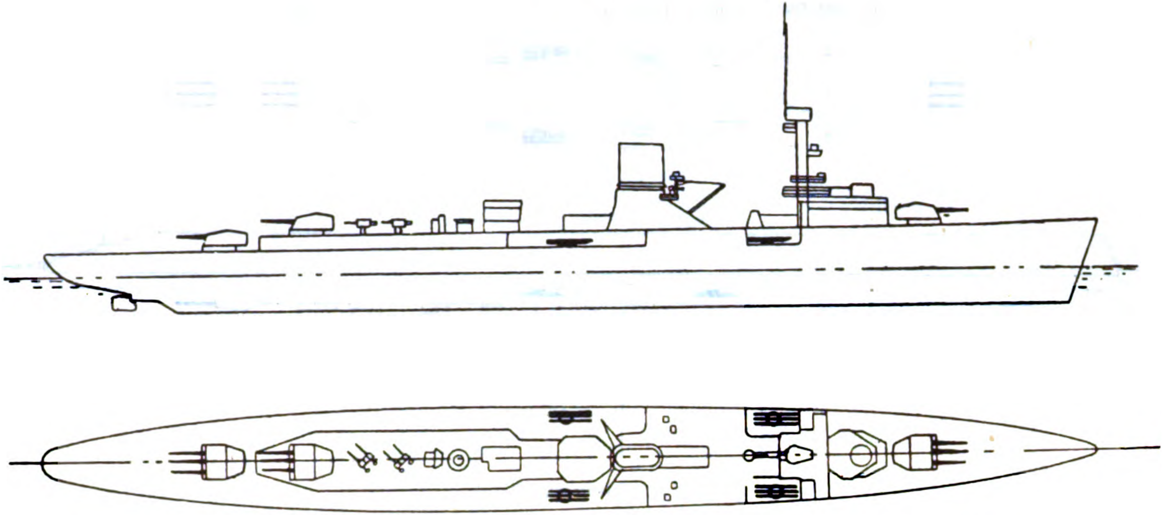


Length (extreme), 570 ft. 10 ins. ; 6,000 tons ; Speed, 32 knots ; Completed, 1929–30.
Armament, 9—5·9-in. ; 4—3·5-in. A.A. ; 4 triple 21-in. torpedo tubes ; 1 catapult ; 2 aircraft.
Pole mainmast fitted on aft side of after funnel. Catapult fitted between funnels. **Crane fitted in lieu of derrick on port side.**

GERMANY.

LIGHT CRUISER.

Leipzig.

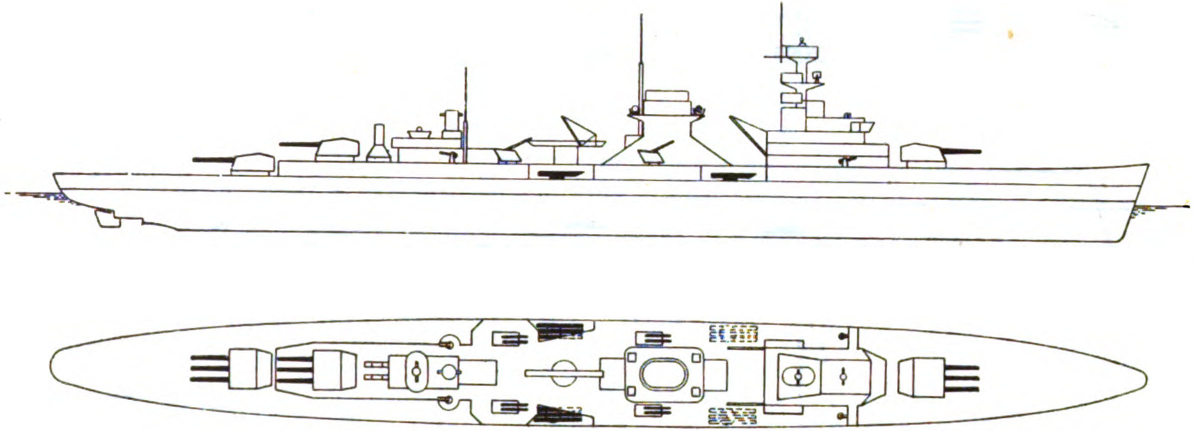


Length (extreme), 581 ft.; Length W.L., 543 ft. 10 ins.; 6,000 tons; Speed, 32 knots; Completed, 1931.
Armament. 9—5·9-in.; 8—3·5-in. A.A.; 8—1·5-in. A.A.; 4 triple 21-in. torpedo tubes; 1 catapult; 2 aircraft.
Corrections to plan.—Pole mainmast fitted on aft side of funnel. Catapult fitted between funnel and foremast. The derrick is fitted on the starboard side. A crane is fitted on port side nearest funnel. Fore topmast shortened.

GERMANY.

LIGHT CRUISER.

Nurnberg.

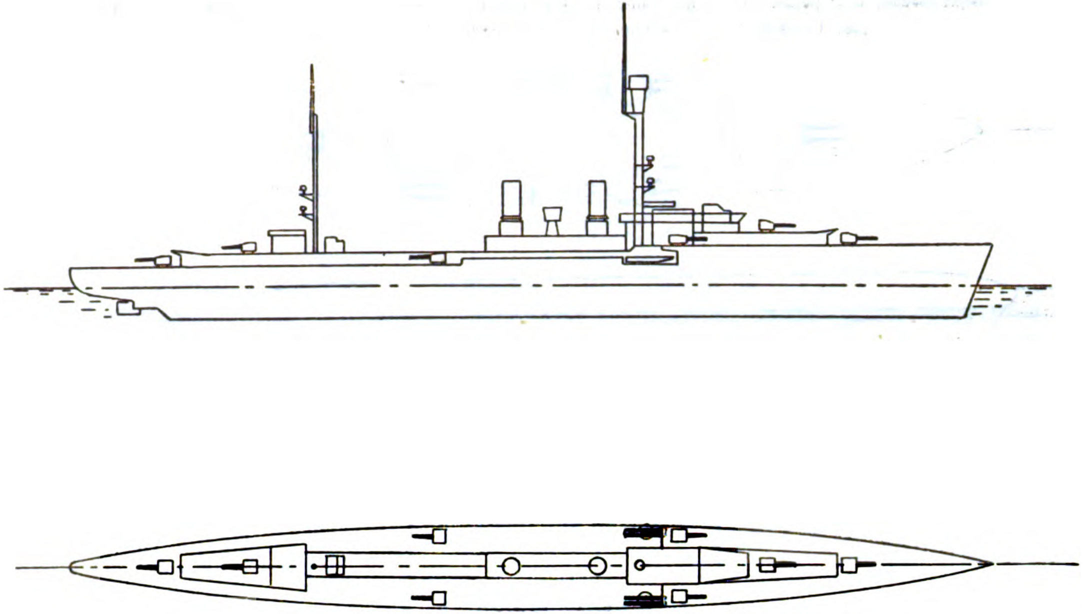


Length (on W.L.), 557 ft. 9 ins.; 6,000 tons; Speed, 32 knots; Completed, 1935.
Armament, 9—5·9-in. 8—3·5-in H.A. 8—1·5-in. A.A. 12—21-in. torpedo tubes; 1 catapult; 2 seaplanes.

GERMANY.

LIGHT CRUISER.

Emden.

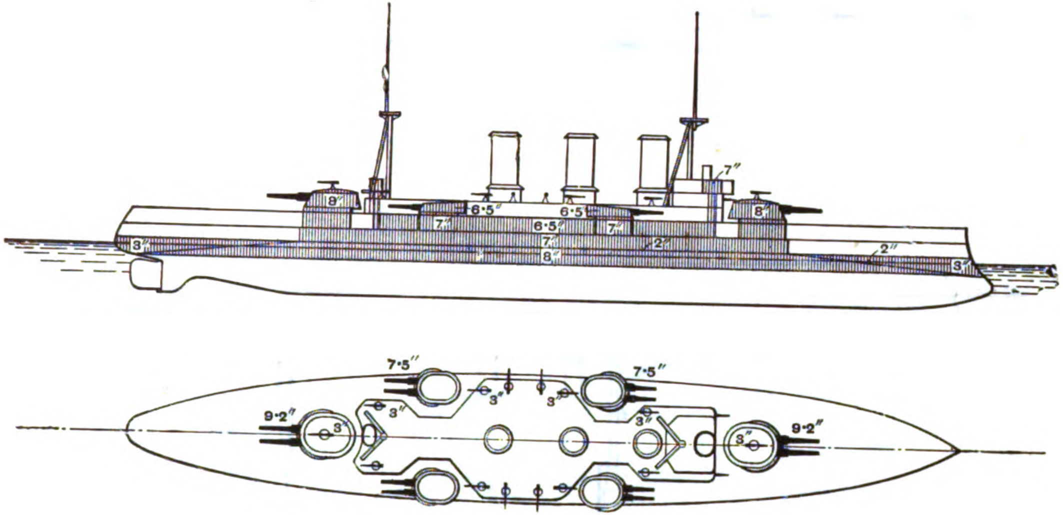


Length (extreme), 510 ft. 2 ins.; 5,400 tons; Speed, 29 knots; Completed, 1925.
Armament, 8—5·9-in.; 3—3·5-in. A.A.; 4 M.G.; 4—19·7-in. torpedo tubes in twin mountings.
The 5·9-in. guns are in twin mountings, 2 forward and 2 aft.
Corrections to plan.—Fore topmast shortened. Pole mast fitted to aft side of funnel.
Superstructure added before mainmast. Mainmast shortened and surmounted by a searchlight platform.

GREECE.

ARMOURED CRUISER.

Giorgios Averoff.



Length, 462 ft.; 9,301 tons; Speed, 22·5 knots; Completed, 1911. Refitted, 1927.

Armament, 4—9·2-in.; 8—7·5-in.; 16—3-in.; 2—3-in. A.A.; 4—3-pr.; 2 M.; 3 submerged 18-in. torpedo tubes.

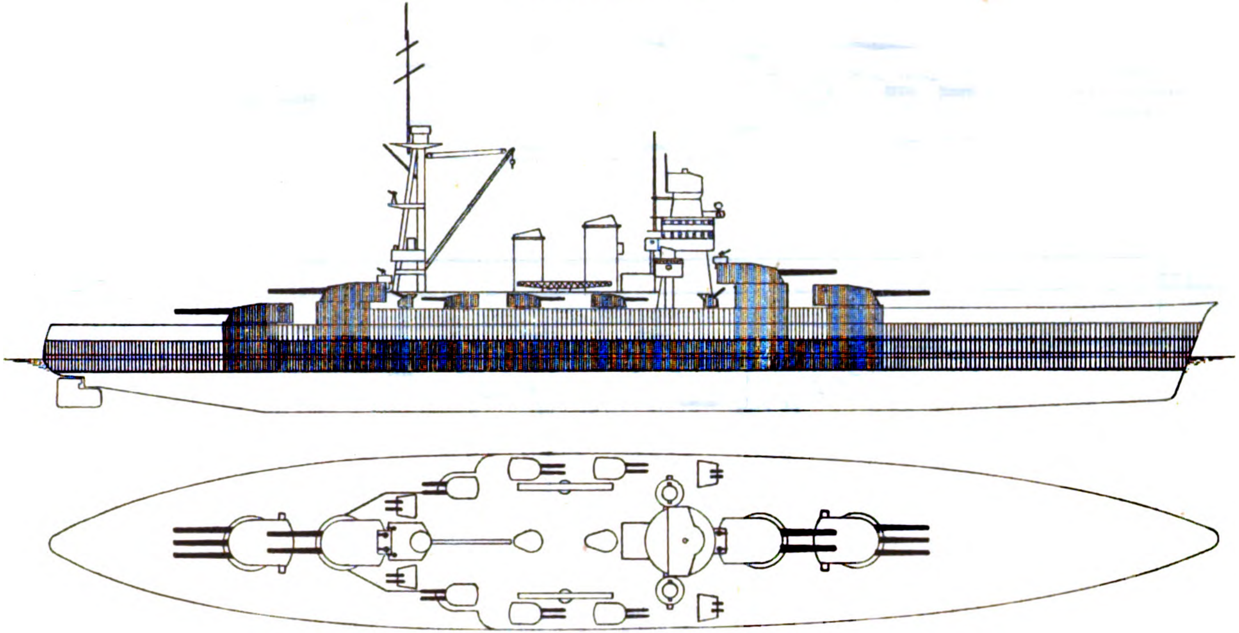
Correction to plan.—Bridgework modified. Control top fitted on foremast. Searchlight and derrick fitted to mainmast.

ITALY.

BATTLESHIPS.

Conte di Cavour. **Giulio Cesare.** **Andrea Doria.** **Caio Duilio.**

(After modernisation.)



Length (extreme), 611 ft. 6 ins. ; 23,622 tons ; 27 knots ; Completed, 1914–15 ; Modernised, 1937.

Armament { **10—12·6-in. ; 12—4·7-in. ; 8—3·9-in.** A.A. **; 36** A.A. M.G. **; 4 aircraft ; 2 catapults in Cavour and Cesare.**
{ **10—12·6-in. ; 12—5·3 in. ; 10—3·5 in.** A.A. **; 39** A.A. M.G. **; 1 aircraft ; 1 catapult in Doria and Duilio.**

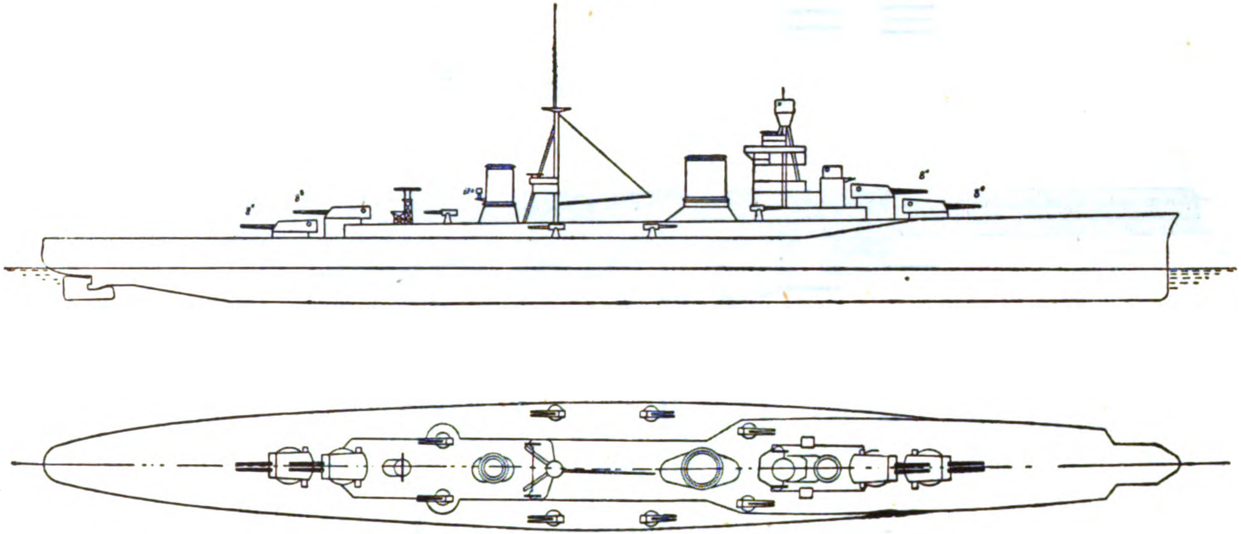
Tripod mainmast removed in Doria.

ITALY.

CRUISER.

Modified "Trento" Class.

Bolzano.



Length (extreme), 646 ft. 3 ins.; 10,000 tons; Completed, 1932; Speed, 35 knots.

Armament, 8—8-in.; 12—3·9-in. A.A.; 8—1·5 M. A.A.; 8—·5 M. A.A.; 1 catapult; 2 aircraft; 8—21-in. torpedo tubes.

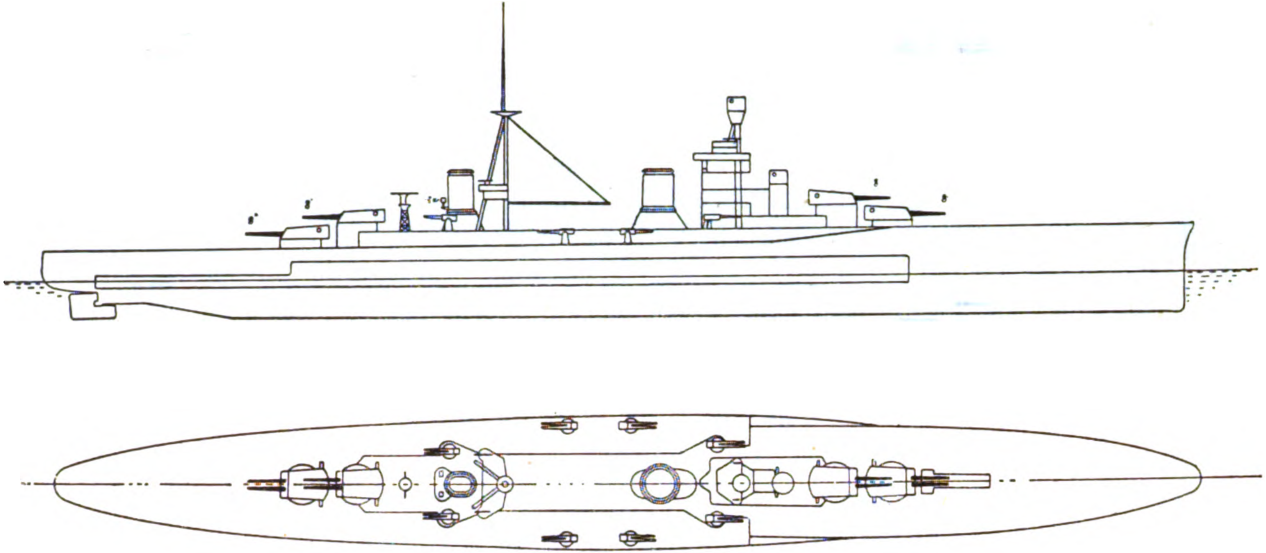
Corrections to plan.—Forward superstructure faired into funnel. Clinker screens fitted to funnels. Catapult fitted amidships.

ITALY.

CRUISER.

"Zara" Class

Gorizia.



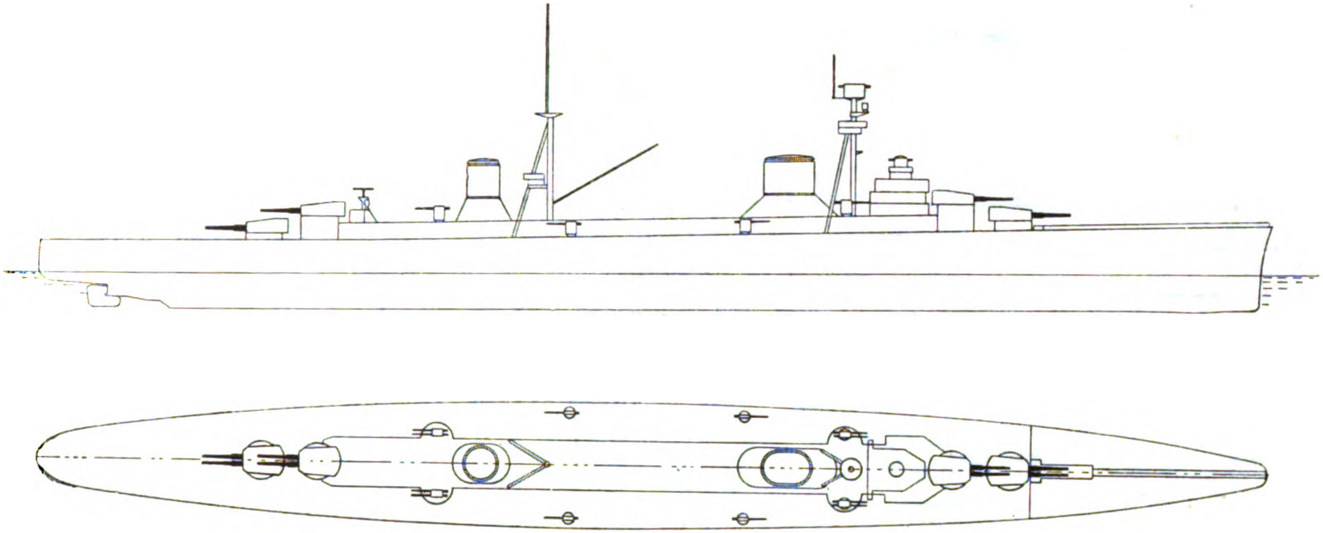
Length (extreme), 599 ft. 9 ins.; 10,000 tons; Speed, 32 knots.
Armament, 8—8-in.; 12—3·9-in.; 8—1·5-in. A.A.; 8—·5 M.A.A.; 1 catapult; 2 aircraft.
Corrections to plan.—Forward superstructure faired into funnel. Clinker screens fitted to funnels.

ITALY.

CRUISER.

"Trento" Class.

Trieste.



Length (extreme), 645 ft.; 10,000 tons; Speed, 35 knots; Completed, 1929.

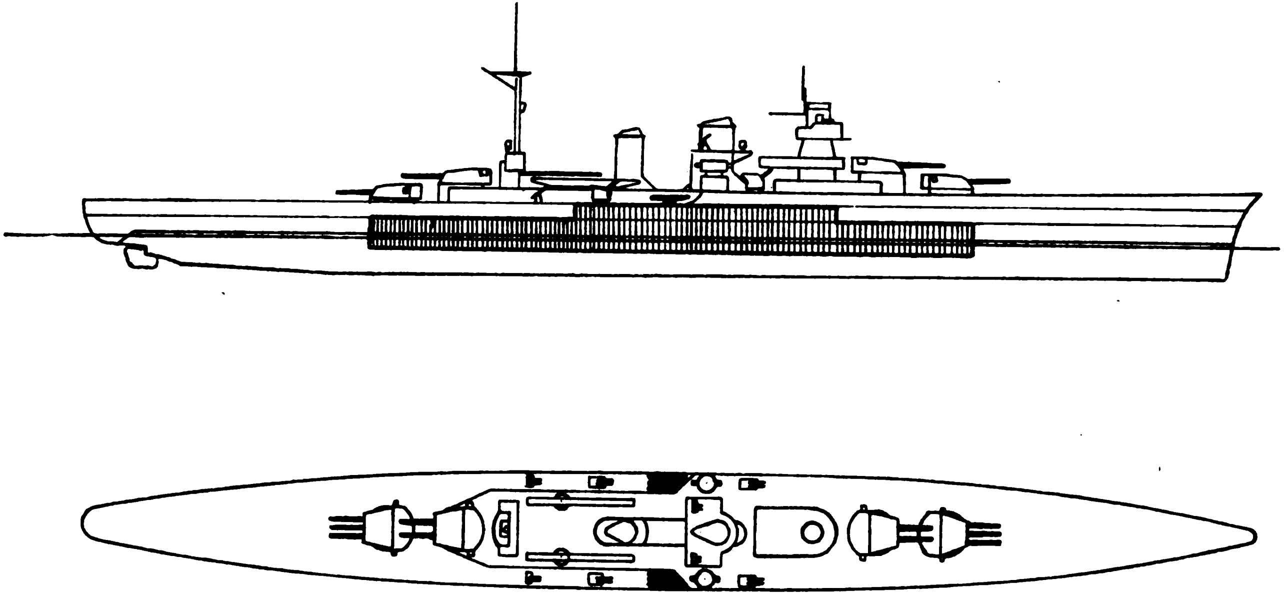
Armament, 8—8-in.; 12—3·9-in.; 4—1·57-in. A.A.; 8—·5 A.A. M.G.; 4 twin torpedo tubes 21-in.
1 catapult; 2 aircraft.

Correction to plan.—The 4-in. guns between the funnels are twin guns. Fore topmast removed. Bridgework extended.

ITALY.

CRUISERS.

Duca Degli Abruzzi. **Guiseppe Garibaldi.**



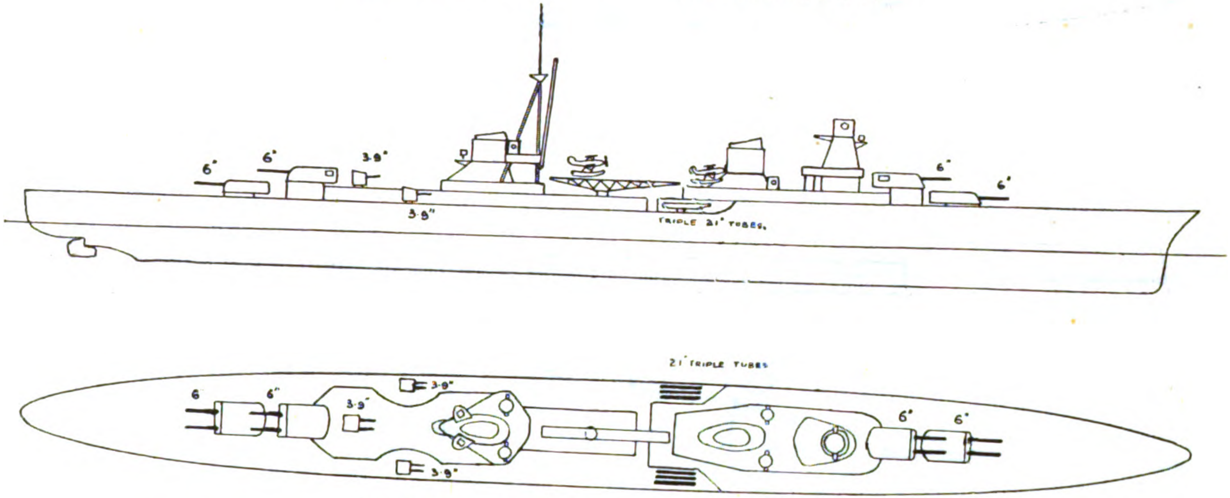
Length (extreme), 613 ft. 9 in.; Standard displacement, 7874 tons; Speed, 35 knots; Completed, 1936.
Armament, 10—6 in.; 8—3·9 in. A.A.; 8—1·5 in. A.A.; 6—21 in. torpedo tubes; 2 catapults; 4 aircraft.

ITALY.

CRUISERS.

"*Attendolo*" *Class.*

Eugenio di Savoia. **Filiberto Duca d Aosta.**



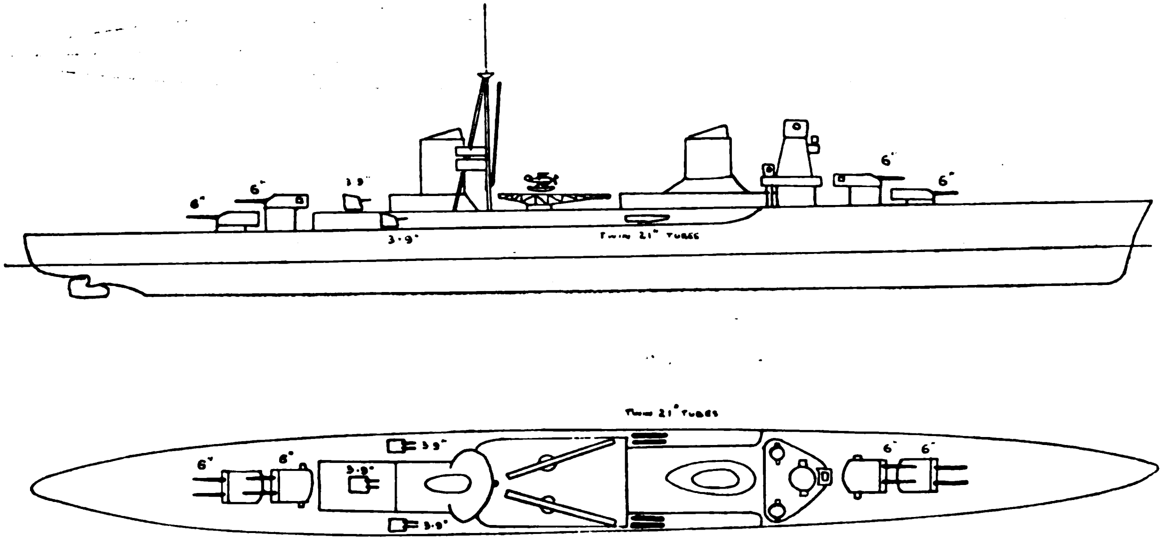
Length (extreme), 610 ft. 3 ins.; 7,283 tons; Speed, 36½ knots.
Armament, 8—6-in.; 6—3·9-in.; 8—1·5-in A.A.; 8—·5-in. A.A.; 2 triple 21-in. torpedo tubes; 1 catapult; 3 aircraft.

ITALY.

CRUISERS.

"*Condottieri*" *Class.*

Montecuccoli. **Muzio Attendolo.**



Length (extreme), 597 ft. 9 ins.; 6,941 tons; Speed, 37 knots: Completed, 1935.
Armament, 8—6-in.; 6—3·9-in. A.A.; 8—1·5-in. A.A.; 8—·5-in. A.A. M.G.: 2 twin 21-in. torpedo tubes; 1 catapult; 2 aircraft.
Correction to plan.—1 catapult fitted on M.L.

ITALY.

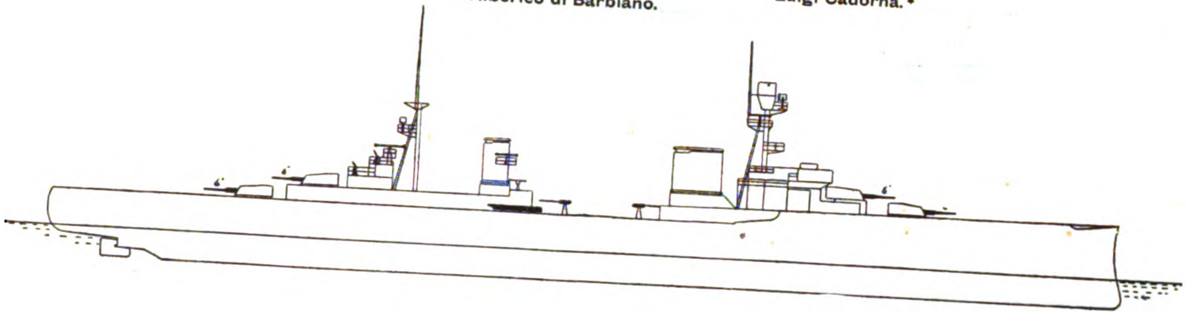
CRUISERS.

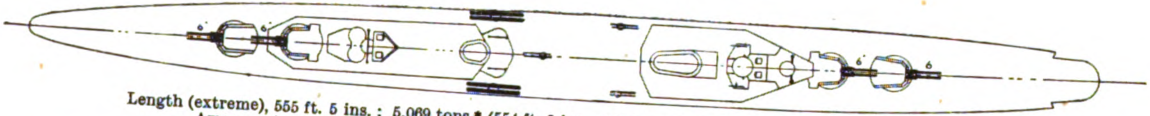
"Condottieri" Class.

Armando Diaz.*

Alberto di Guissano.
Alberico di Barbiano.

Luigi Cadorna.*





Length (extreme), 555 ft. 5 ins.; 5,069 tons * (554 ft. 6 ins., 5,008 tons); Speed, 37 knots; Completed, 1931–33.
Armament, 8—6-in.; 6—3·9-in. A.A.; 8—1·5-in. A.A.; 8—·5 in. A.A. M.G.; 4 torpedo tubes 21-in.;
1 catapult and 2 seaplanes.

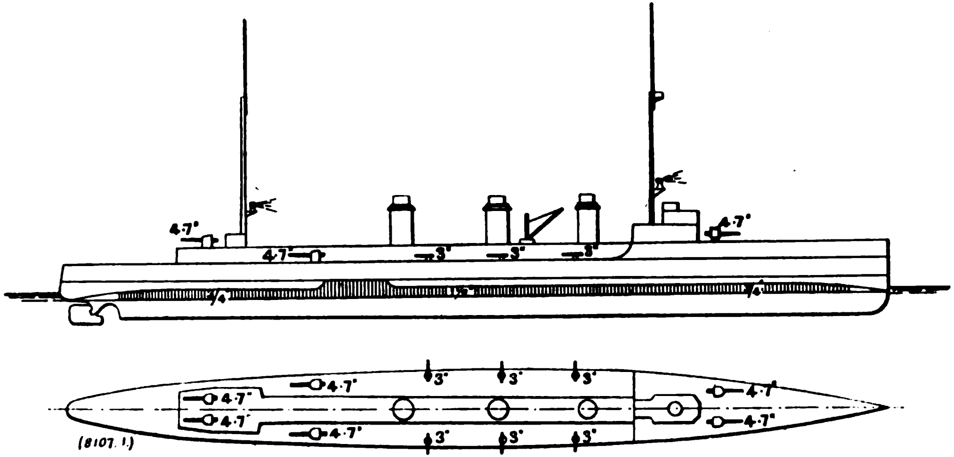
Corrections to plan: The bridge and foremast have been modified. The after twin 3·9-in. A.A. gun is at the superstructure level on a raised platform.
Fore topmast and stays to mainmast removed. Derrick fitted on foreside of mainmast.

* In the Armando Diaz and Luigi Cadorna the mainmast is forward of the after funnel, the torpedo tubes are abreast the forward funnel, and the positions of the twin A.A. guns are reversed, the foremost gun being at forecastle deck level and the two after guns at upper deck level. The catapult is fitted between mainmast and "X" turret in Diaz and Cadorna; on forecastle in other ships.

ITALY.

LIGHT CRUISER.*

Quarto.



Length (extreme), 481 ft. 9 ins.; Speed, 28 knots; 2,903 tons; Completed, 1913.
Armament, 6—4·7-in.; 4—3-in.; 2—1·57-in. A.A.; 3 M.; 2 above-water 18-in. torpedo tubes; 126 mines.

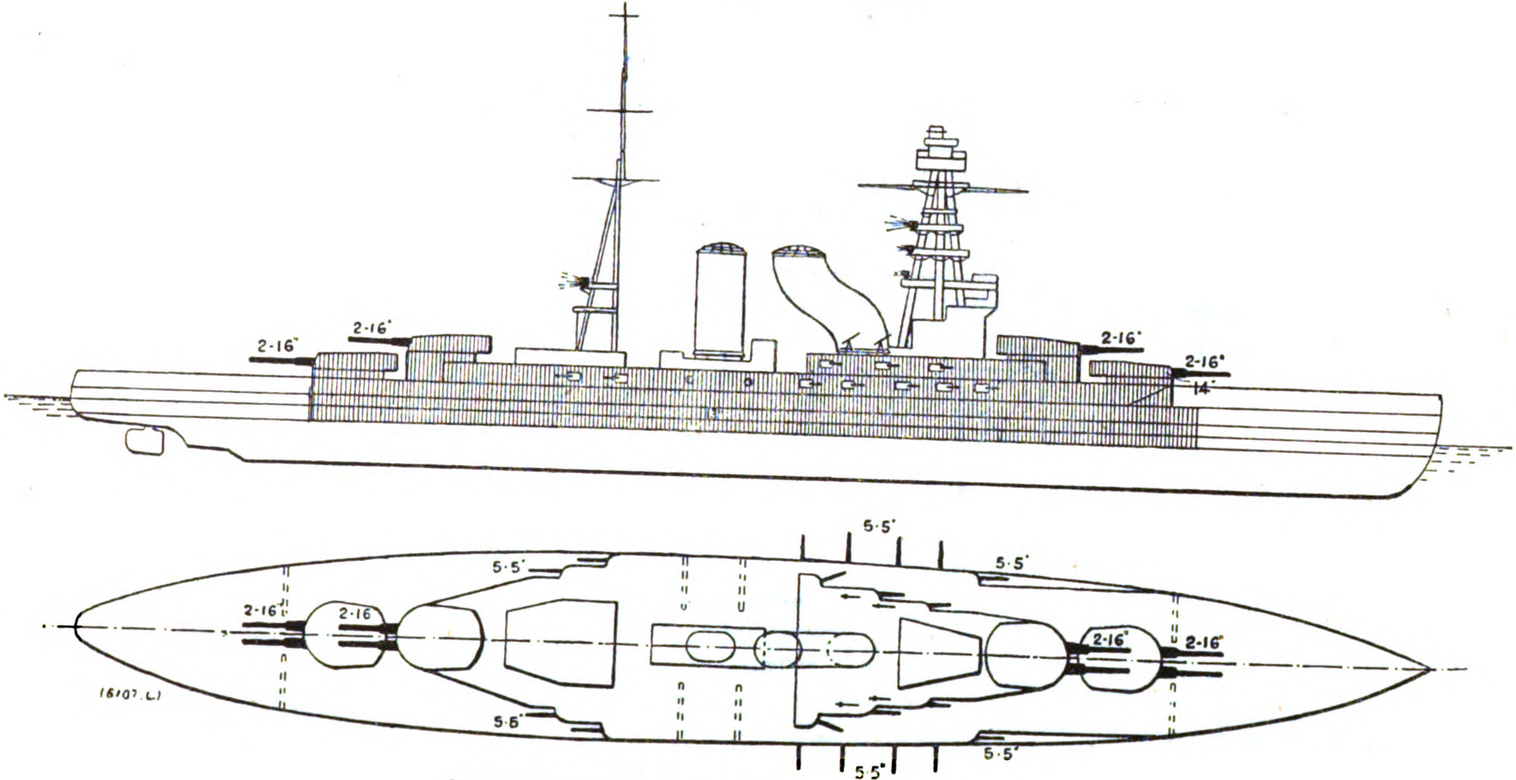
* Classified as Scout in Italian official list.

JAPAN.

BATTLESHIPS.

"*Nagato*" *Class*.

Nagato. **Mutsu.**



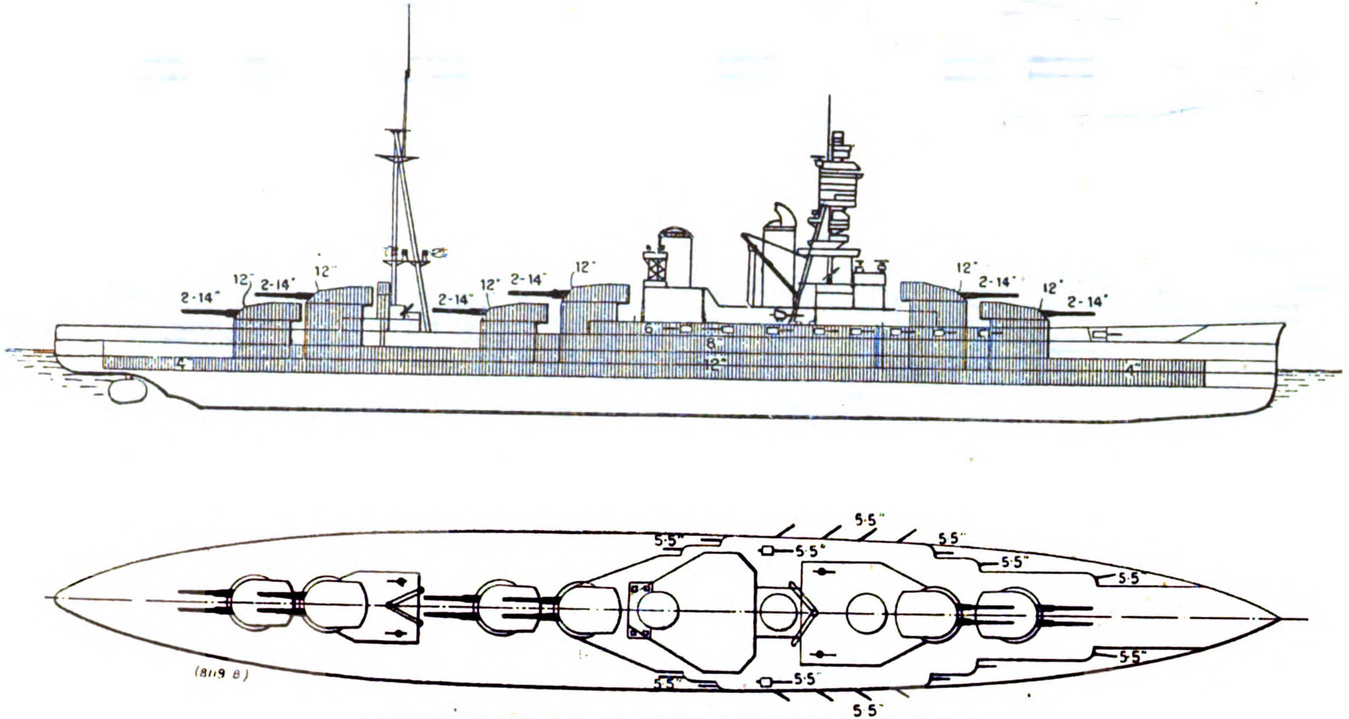
Length (extreme), 700 ft.; Speed, 26 knots; 32,720 tons; Completed, 1920–1921.
Armament, 8—16-in.; 20—5·5-in.; 8—5-in. A.A.; 8 M.A.A.; 1 catapult; 3 aircraft.
These ships were reconstructed 1935–36, a single funnel being fitted and a catapult added between mainmast and "X" turret.
Bridgework extended. Superstructure built round mainmast. Main topgallant mast removed.

JAPAN.

BATTLESHIPS.

"*Fuso*" *Class.*

Ise. Hyuga.



Length (extreme), 683 ft.; Speed, 23 knots; 29,990 tons; Completed, 1917-18.
Armament, 12—14-in.; 18—5·5-in.; 8—5-in. A.A.; 8 M.; 3 seaplanes; 1 catapult.
Correction to plan.—Fore topmast and foremost funnel removed. Superstructure built round mainmast. Main topgallant mast removed. Bridgework modified.

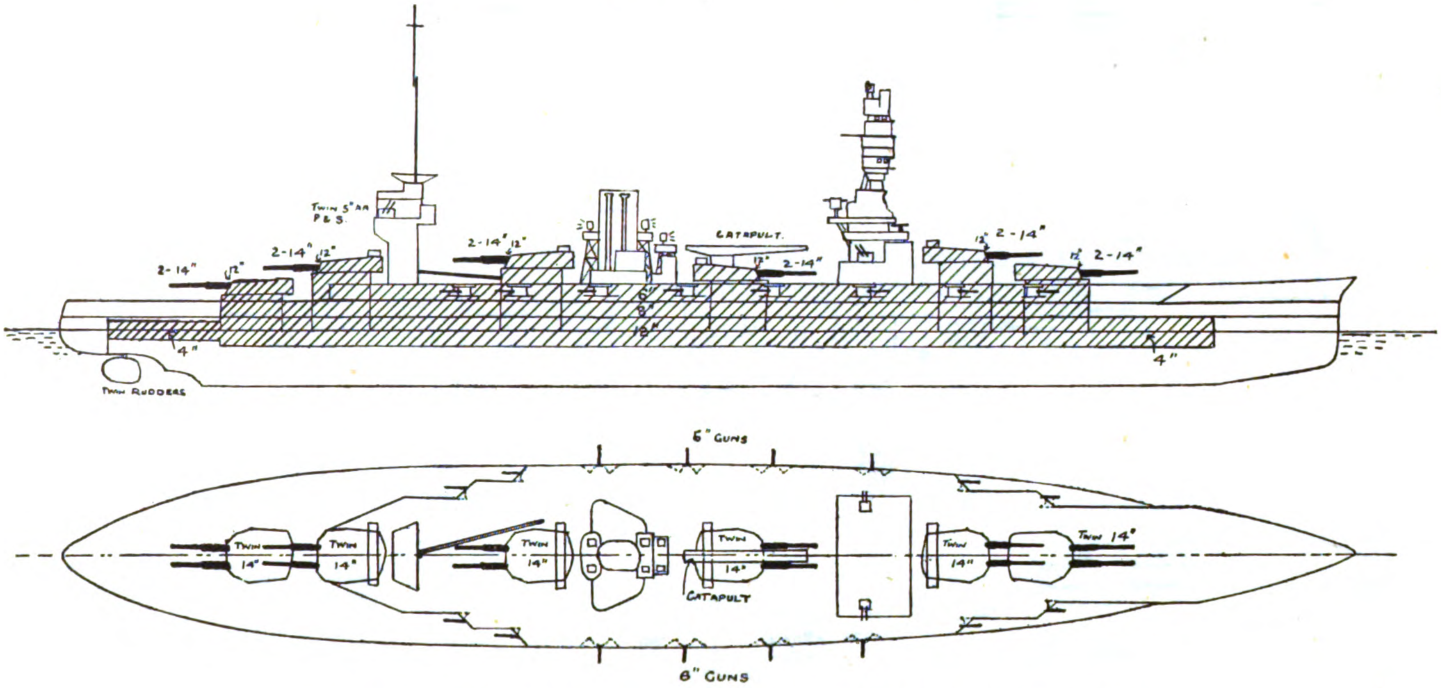
JAPAN.

BATTLESHIPS.

"Fuso" Class.

Fuso. **Yamashiro.**

(After reconstruction, 1934.)



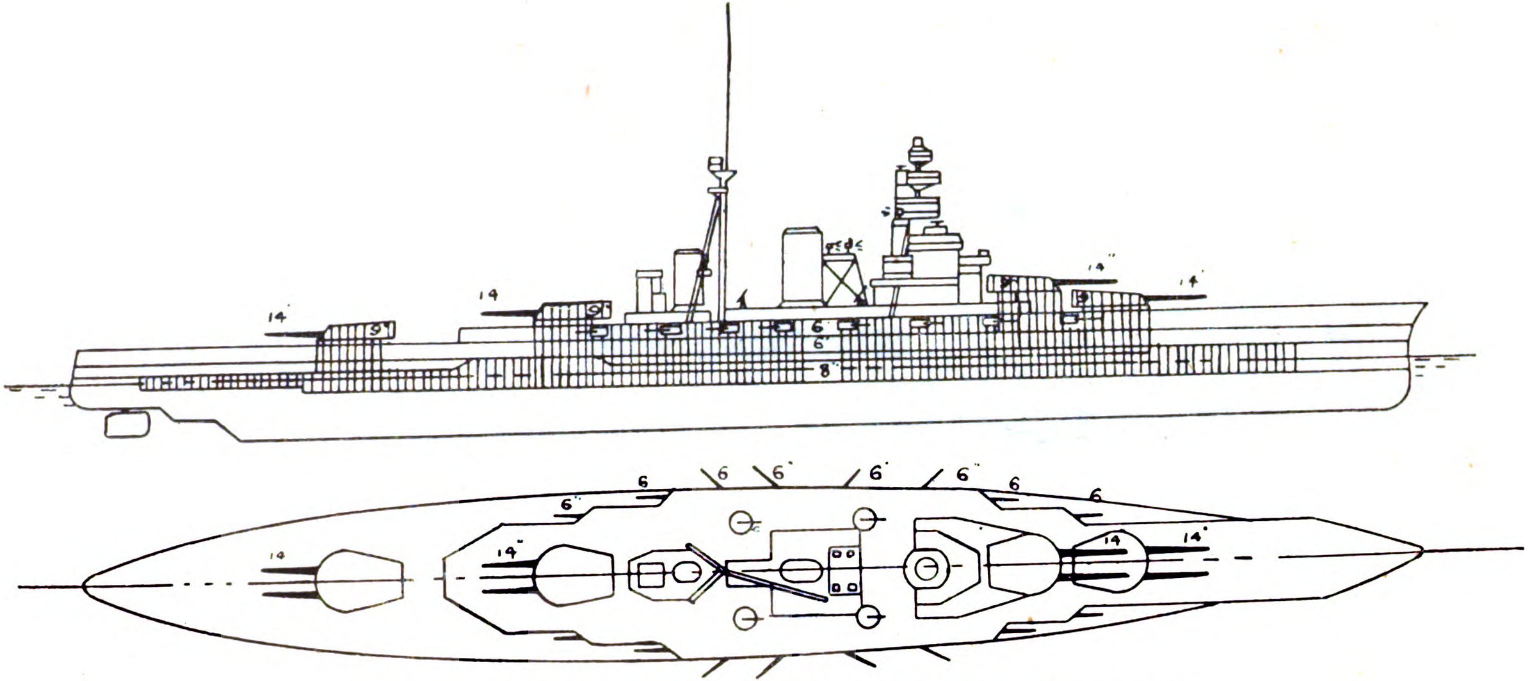
Length (extreme), 673 ft. ; Speed, 22¼ knots ; 29,330 tons (standard) ; Completed, 1915. Reconstructed, 1933.
Armament, 12—14-in. 16—6-in. ; 8—5-in. A.A. ; 4 M.G. ; 4 L. ; 1 catapult ; 3 seaplanes.

JAPAN.

BATTLESHIPS.

"Kongo" Class.

Hiyei. **Kirishima.** **Kongo.**

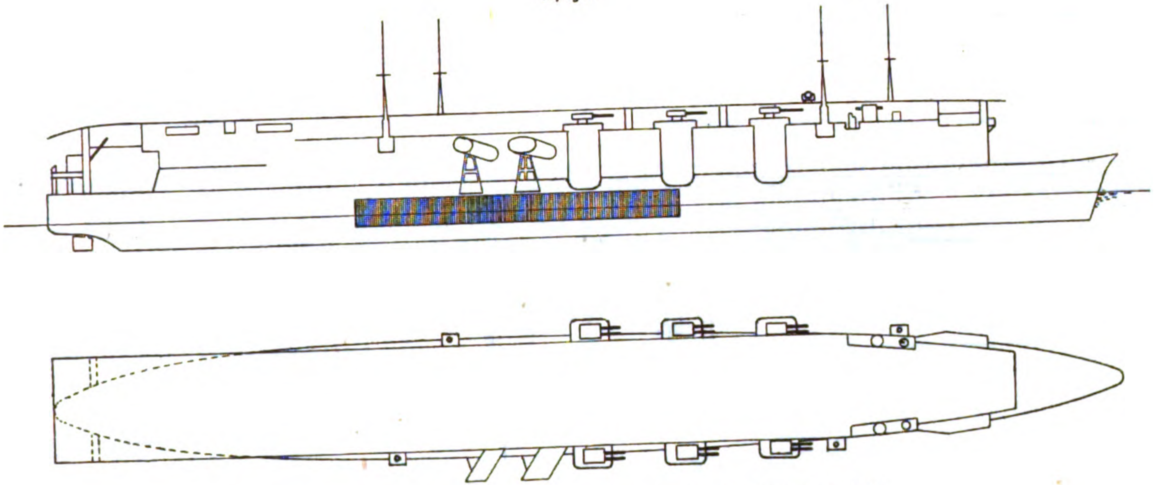


Length (extreme), 704 ft.; Speed, 26 knots; 29,330 tons; Completed, 1914-15. Reconstructed, 1935—36.
Armament, 8—14-in.; 16—6-in.; 8—5-in. A.A.; 4 M.; 4 submerged 21-in. torpedo tubes; 3 aircraft; 1 catapult.
Hiyei of this class has been converted to a Training Ship in accordance with the London Naval Treaty.
Corrections to plan.—The A.A. guns are in twin mountings. Derrick fitted between after turrets. Kongo has funnels of equal height.

JAPAN.

AIRCRAFT CARRIER.

Ryujo.

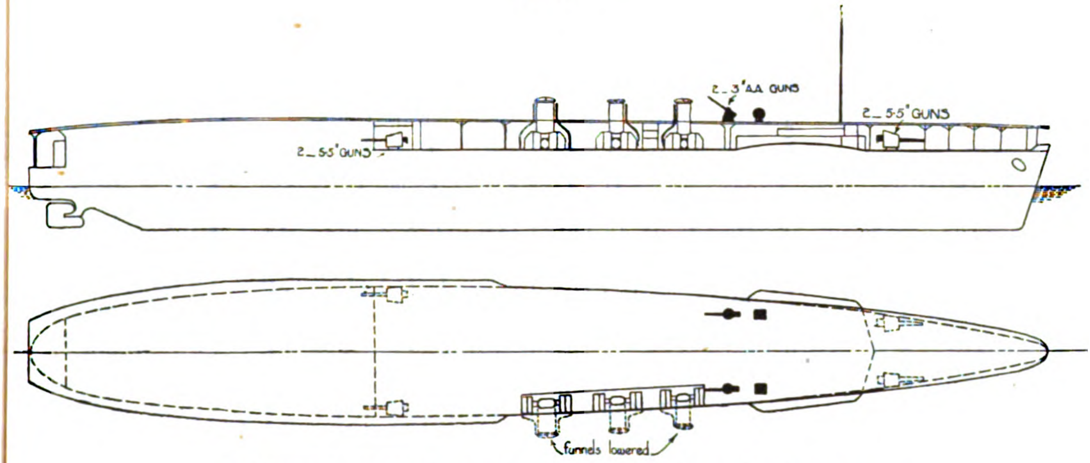


Length (on W.L.), 548 ft.; 7,100 tons; Speed, 26 knots; Completed, 1933.
Armament, 12—5·1-in. A.A. Accommodation for 24 planes.

JAPAN.

AIRCRAFT CARRIER.

Hosho.

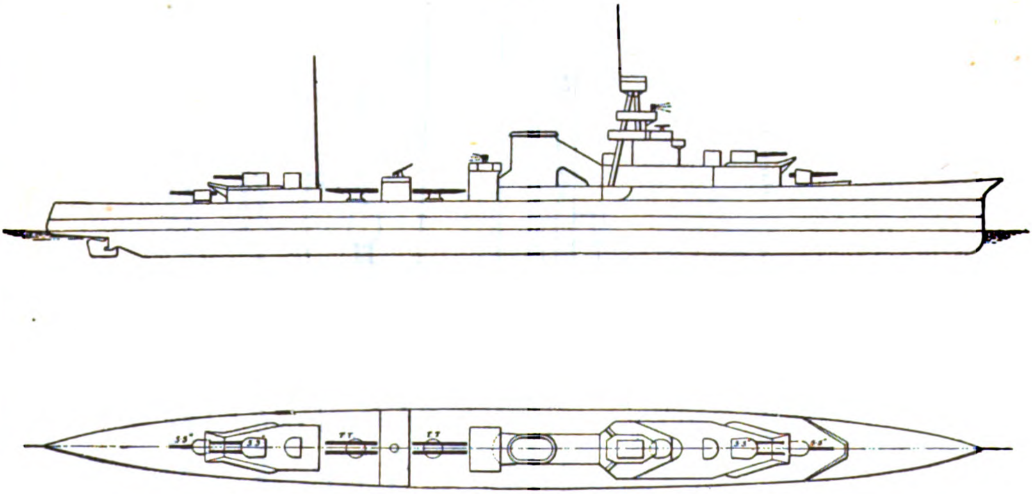


Displacement, 7,470 tons; Length B.P., 510 ft.; **Speed, 25 knots; Completed, 1922.**
Armament, 4—5·5-in.; 2—3-in. A.A.; Carries **about 20 planes; Fitted with gyro-stabiliser.**
Funnels hinge outboard.

JAPAN.

LIGHT CRUISER.

Yubari.

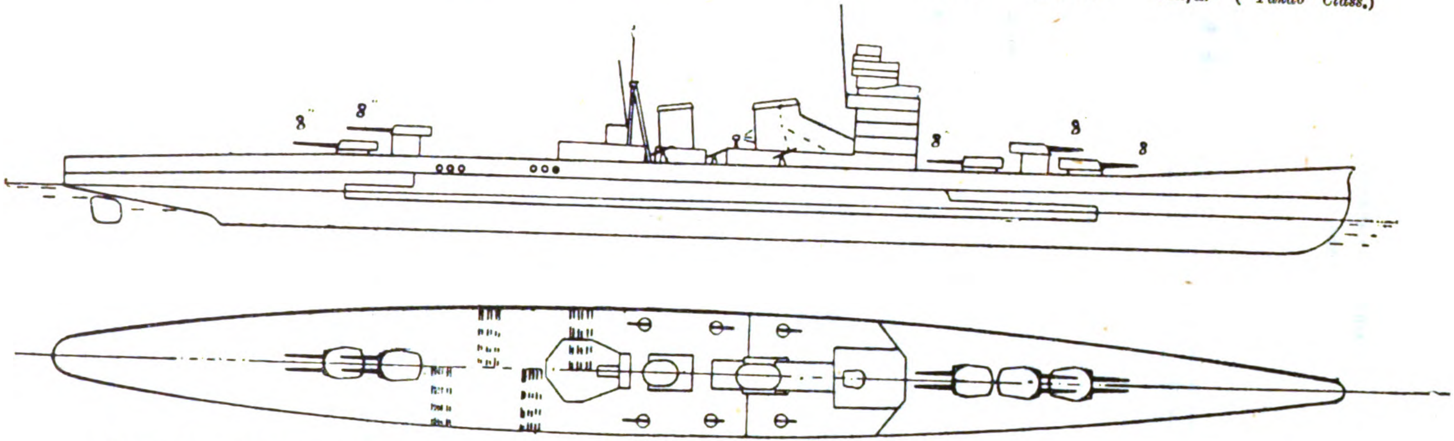


Length (extreme), 465 ft.; 2,890 tons; Speed, 33 knots. Completed, 1923.
Armament, 6—5·5-in.; 1—3-in. A.A.; 2 M.; **2 twin 21-in. torpedo tubes; 34 mines.**
Correction to plan.—Masts and funnel raked aft.

JAPAN.

CRUISERS.

Nachi. Myoko. Ashigara. Haguro. (*“Nachi” Class.*) **Atago.* Takao.* Chokai.* Maya.*** (*“Takao” Class.*)



Length (extreme), 650 ft. (“Takao” Class); 640 ft. (“Nachi” Class); “Nachi” Class, 10,000 tons; “Takao” Class, 9,850 tons; Speed, 33 knots. Armament, 10—8-in.; 8—4·7-in. A.A., 2 M.; 12—21-in. torpedo tubes; 2 catapults; 4 aircraft.

* These have 4—4·7-in. A.A., and 8—21-in. torpedo tubes.

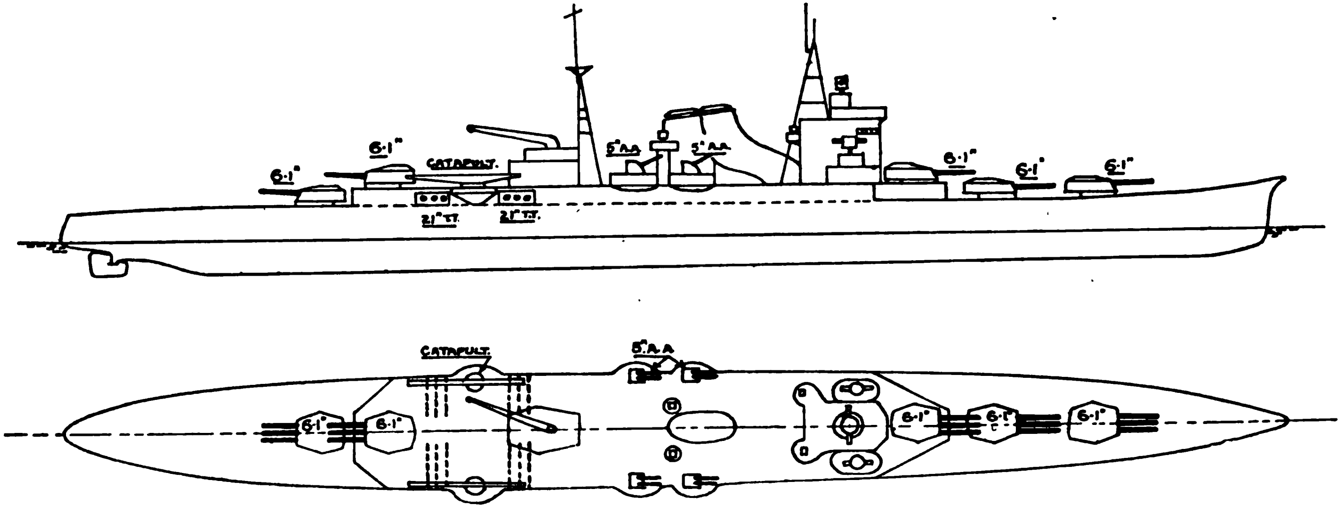
Corrections to plan.—In the “Takao” Class the after funnel is vertical, and the torpedo tubes are beneath the funnels on a deck higher. The four 4·7-in. A.A. guns are also a deck higher. Foremast has four braced legs In the “Nachi” Class the foremost pair of 4·7-in. A.A. guns are a deck higher. Catapults fitted abaft mainmast.

JAPAN.

CRUISERS.

"*Mogami*" *Class.*

Suzuya. Kumano. Tone. Tikuma.



Length (extreme), 640 ft. ; 8,500 tons ; Speed, 33 knots.

Armament, 15—6·1 in. ; 8—5-in. A.A. ; 12—21-in. torpedo tubes ; 2 catapults, 4 aircraft.

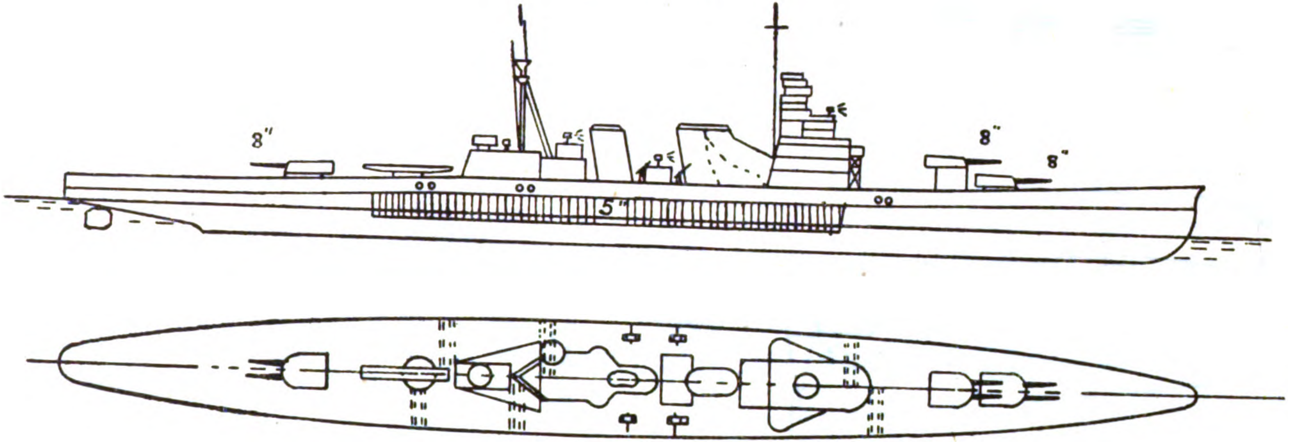
Mogami completed, 1935 ; Suzuya, 1936 ; Kumano, 1937 ; Tone, 1938 ; Tikuma, 1939.

JAPAN.

CRUISERS.

"*Furutaka*" *Class.*

Aoba. **Kinugasa.**



Length (extreme), 595 ft. ; 7,100 tons ; Speed, 33 knots ; Completed, 1927.
Armament, 6—8-in. ; 4—4·7-in. A.A. ; 10 M. ; 12—21-in. torpedo tubes ;
1 catapult ; 2 aircraft.

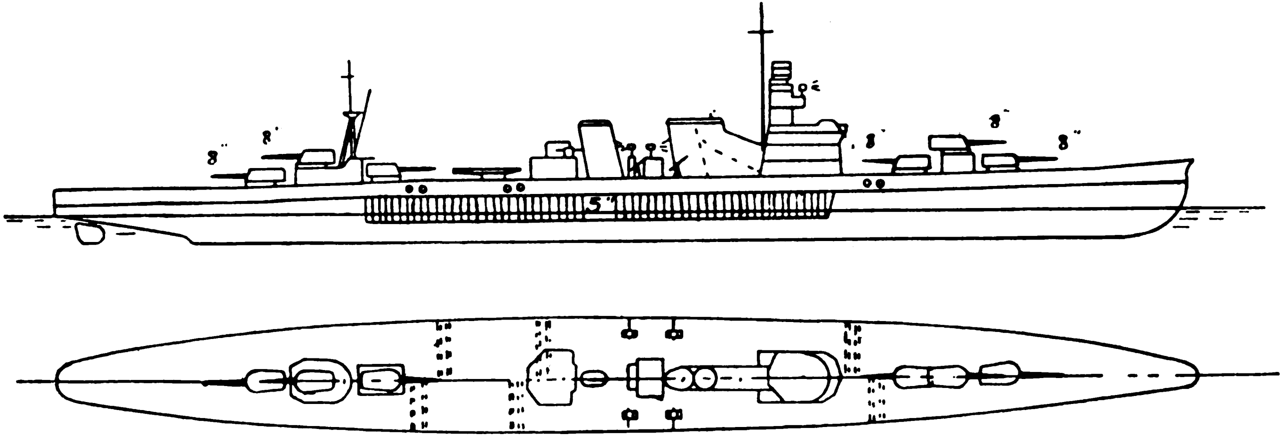
Correction to plan.—The tops of the funnels are square to the funnels.
The pole mast is raked.

JAPAN.

CRUISERS.

"*Furutaka*" *Class.*

Furutaka. **Kako.**



Length (extreme), 595 ft.; 7,100 tons; Speed, 33 knots.
Armament, 6—8-in.; 4—4·7-in. A.A.; 10 M.; 12 above-water 21-in. torpedo tubes;
1 catapult; 2 aircraft.

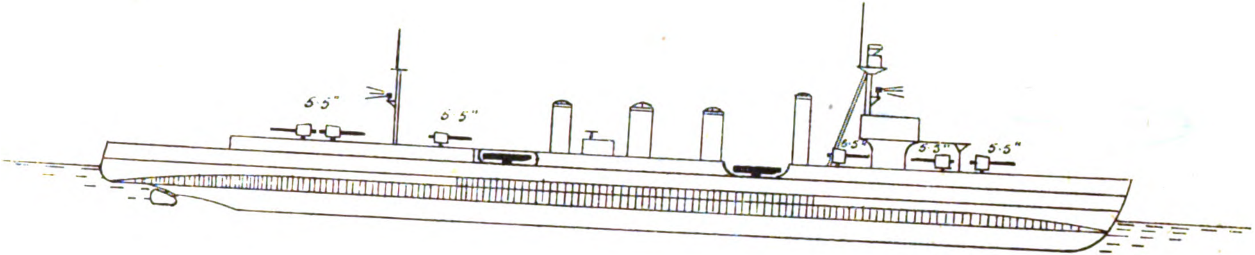
Correction to plan.—The tops of the funnels are square to the funnels.
The masts are raked.

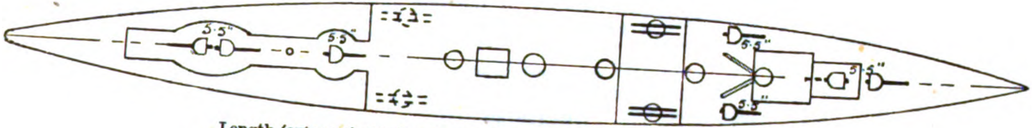
JAPAN.

LIGHT CRUISERS.

"Sendai" Class.

Naka. **Sendai.** **Jintsu.**





Length (extreme), 535 ft. ; Speed, 33 knots ; 5,195 tons ; Completed, 1924–25.
Armament, 7—5·5-in. ; 2—3-in. A.A. ; 5 M. ; 4 twin 21-in. torpedo tubes ; 80 mines ;
1 seaplane ; 1 catapult.

Correction to plan.—Bows of Jintsu and Naka have been modified to give more flair.
Catapult fitted abaft mainmast which is of tripod construction and is fitted with a derrick.
Aircraft platform removed from forecastle.

JAPAN.

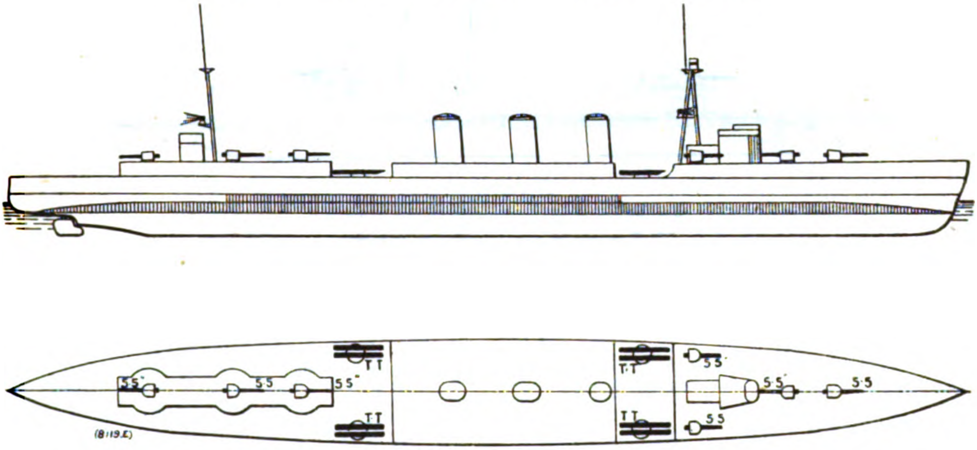
LIGHT CRUISERS.

"Natori" Class.

Isudzu. **Nagara.**	**Natori.** **Yura.**	**Kinu.** **Abukuma.**

"Kuma" Class.

Oi. **Kiso.** **Kitakami.** **Tama.** **Kuma.**



Length (extreme), 535 ft.; Speed, 33 knots; "Kuma" Class, 5,100 tons; "Natori" Class, 5,170 tons; Completed, 1920–23.

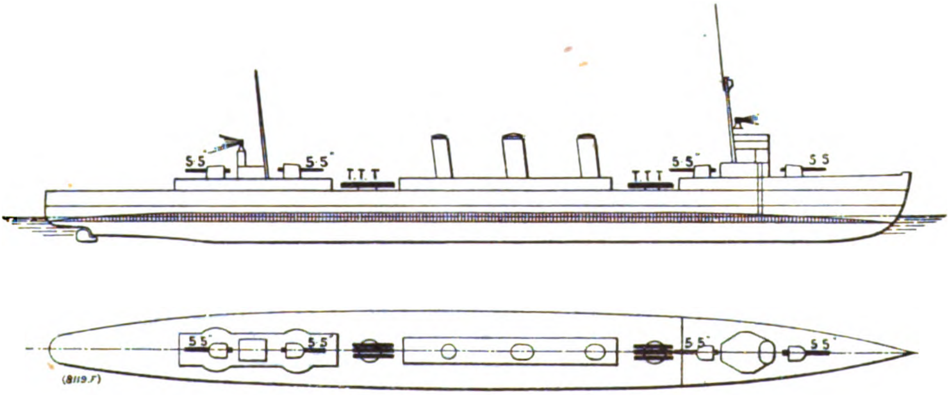
Armament, 7—5·5-in.; 2—3-in. A.A.; 2 M.; 4 twin above-water 21-in. torpedo tubes; 1 catapult; 1 aircraft. 80 mines.

Corrections to plan.—Catapult fitted before mainmast, which is of tripod construction and is fitted with a derrick. Bridgework modified and anti-flare tops fitted to funnels.

LIGHT CRUISERS.

"Tenryu" Class.

Tatsuta. **Tenryu.**

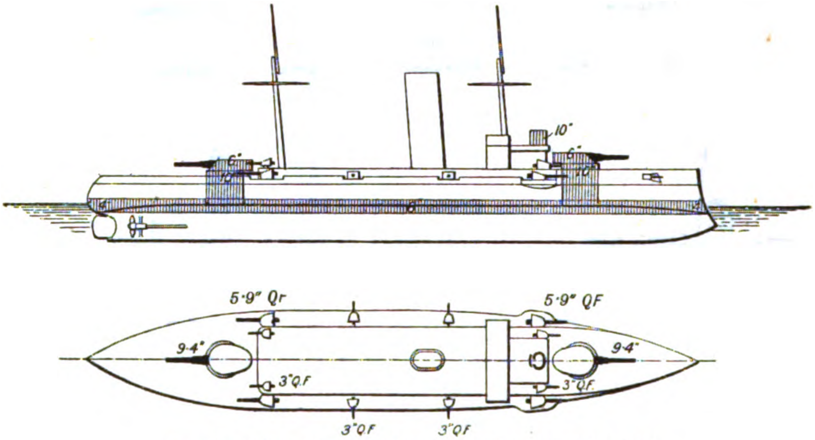


Length (extreme), 468 ft.; Speed, 31 knots; 3,230 tons; Completed, 1919.
Armament, 4—5·5-in.; 1—3-in. A.A.; 2 M.; 2 triple above-water torpedo tubes; 1 seaplane.
Fitted for Minelaying.

NETHERLANDS.

COAST DEFENCE SHIP.

Hertog Hendrik.

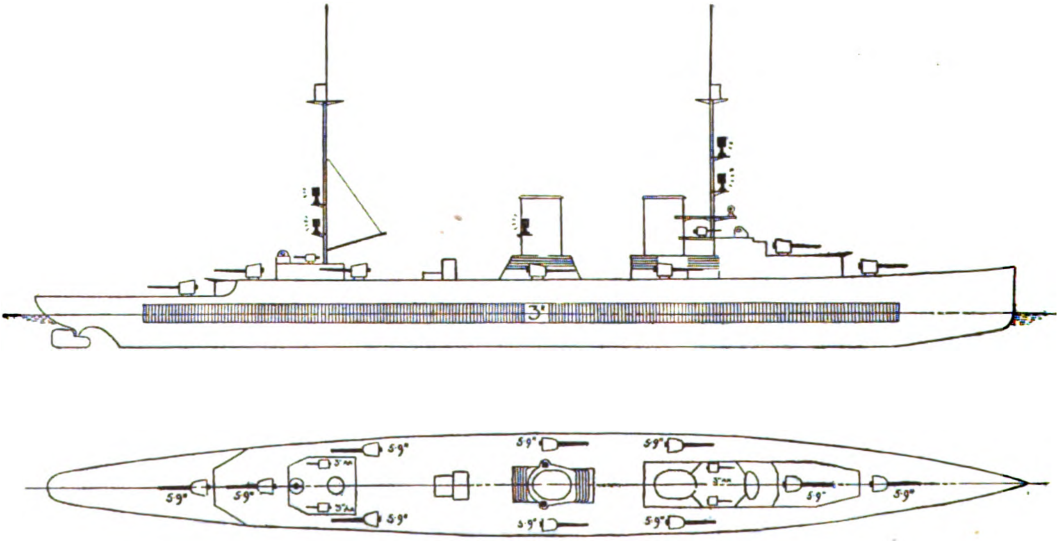


Length, 317 ft.: 4,371 tons; Speed, 16 knots; Completed, 1904.
Armament, 1—9·4-in.; 4—5·9-in.; 2—3-in.; 6—1 pr.: 2 M.
After gun removed.

NETHERLANDS.

CRUISER.

Sumatra.



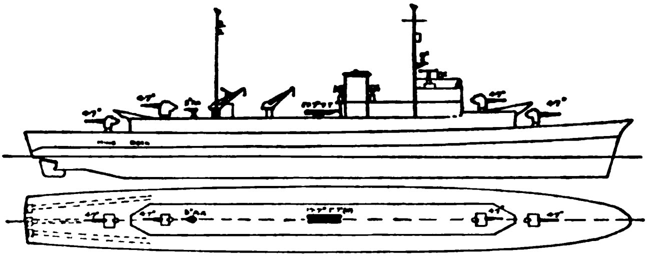
Length, 509½ ft.; 6,670 tons; Speed, 31 knots; Completed, 1925–26.
Armament, 10—5·9 in.; 6—1·5 in.; 6—·5-in. A.A.; 8 M.;
40 mines; 2 seaplanes.

Corrections to plan.—The 4—3-in. A.A. have been removed. The mainmast has been shortened, moved forward, and fitted with derrick and searchlights. Main topmast removed. 3—4-cm. machine guns have been fitted each side of the after deck house. The forward 4-sided 5·9-in. have been raised a deck to the signal deck, which has been extended aft for the purpose. Fore topmast shortened and foremast made larger. Cranes fitted abreast **foremost funnel. Aircraft stowed between funnels.**

NORWAY.

MINELAYER AND TRAINING SHIP.

Olav Trygvason.



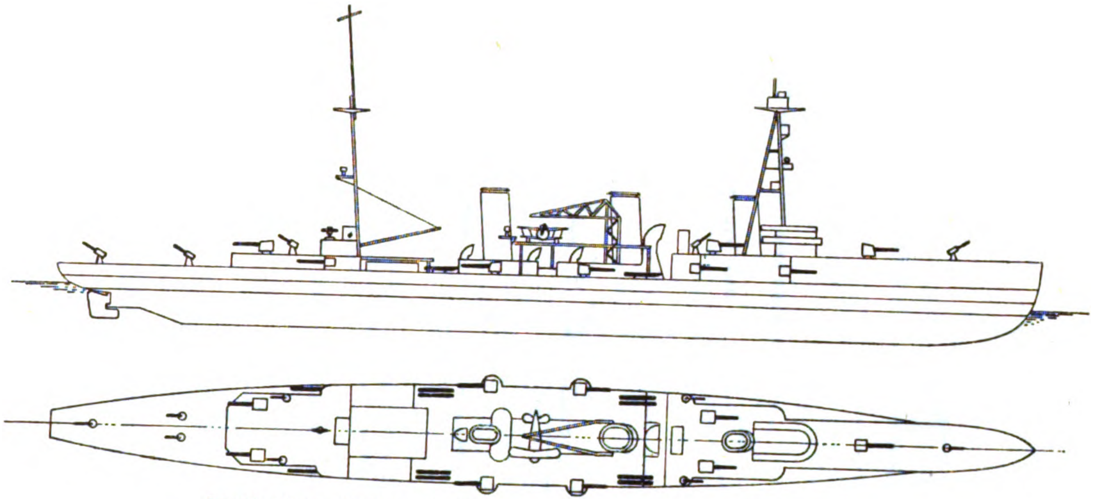
Length, 319½ ft.; 1,747 tons; speed, 21½ knots; Completed, 1934.
Armament, 4—4·7-in.; 1—3-in. A.A.; 2—17·7-in. torpedo tubes.
280 mines.

Correction to plan.—Both cranes are fitted abreast the mainmast.

SOVIET UNION.

CRUISER.

Profintern.

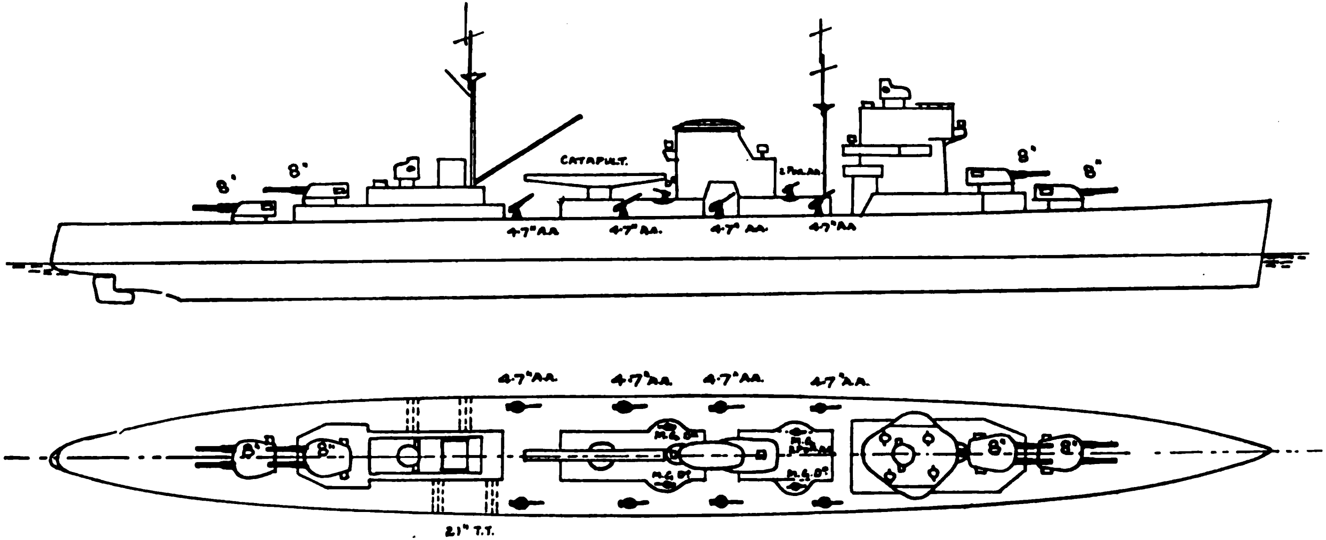


Length, 520 ft.; Displacement, 7,200 tons; Speed, 29½ knots; Completed, 1924–25.
Armament, 15—5·1-in.; 4—4-in.; 4—3-in. A.A.; 4 M.; 12—21-in. torpedo tubes; 100 mines; 2 seaplanes.

SPAIN.

CRUISER.

Canarias.



Length (extreme), 636 ft.; 10,000 tons; 33 knots; Completed, 1935.

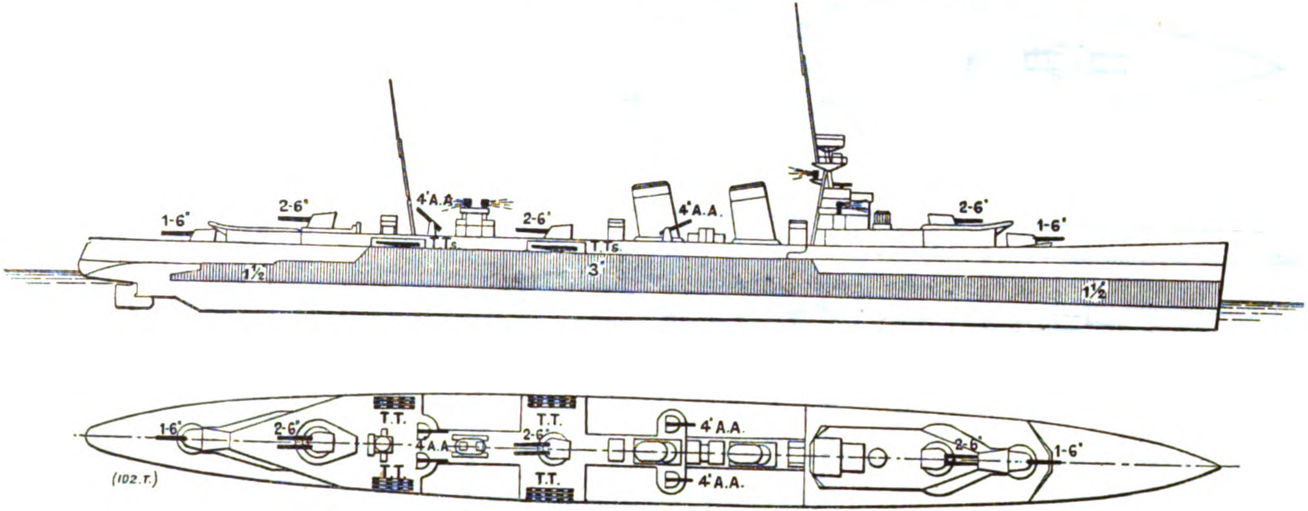
Armament, 8—8-in.; 8—4·7-in. A.A.; 8—2-pr. A.A.; 12—21-in. torpedo tubes; 1 catapult; 2 aircraft.

Masts removed.

SPAIN.

CRUISERS.

Galicia (*ex*-**Libertad**, (*ex*-**Principe Alfonso**). **Almirante Cervera.** **Miguel de Cervantes.**

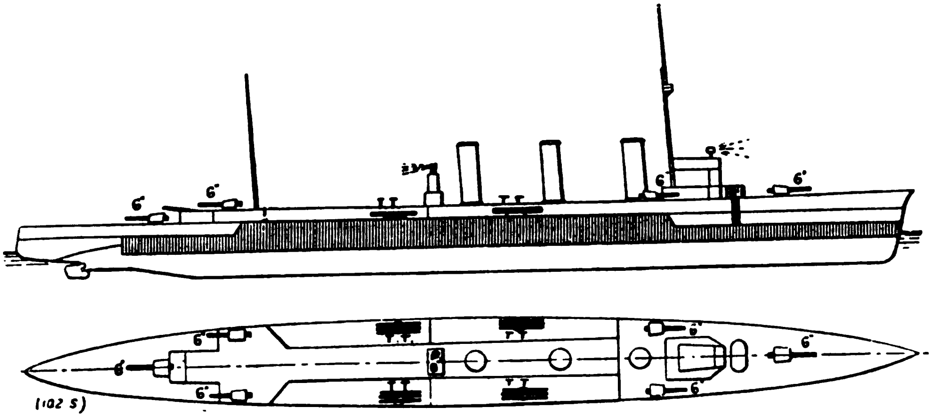


Length (extreme), 579 ft. 6 ins.; 7,475 tons; Speed, 33 knots. Completed 1927–1930.
Armament, 8—6-in.; 4—4-in. A.A.; 2—3 pr.; 1 M.; 4 triple above-water torpedo tubes (21-in. torpedoes).
Corrections to plan.—The mainmast is tripod. Fore topmast and topgallant mast removed.

SPAIN.

LIGHT CRUISER.

Mendez Nuñez.



(102 S)

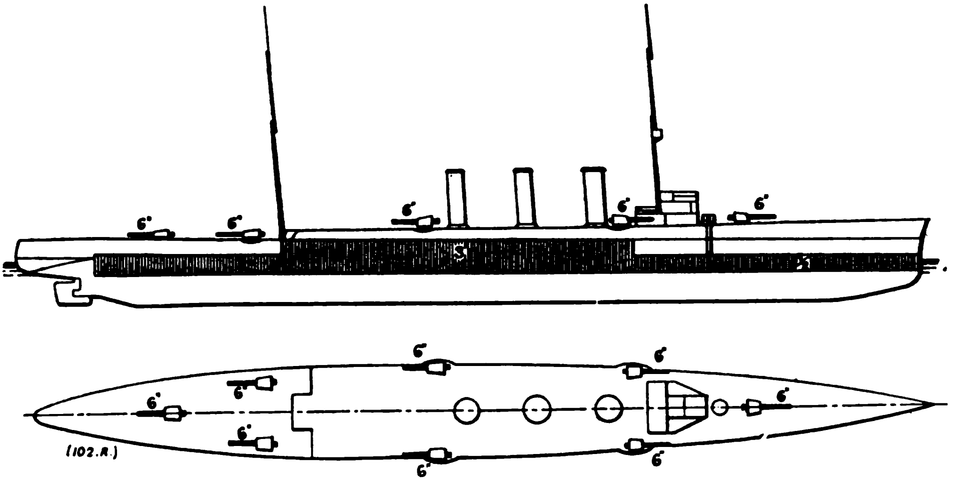
Length (extreme), 462 ft. ; 4,509 tons ; Speed, 29 knots. Completed, 1924.
Armament, 6—6-in. ; 4—1·9-in. A.A. ; 4 M. ; 4 above-water triple torpedo tubes (21-in. torpedoes).

NOTE.—The armour belt is 3 ins. thick, tapering to 1½ ins. at the ends.

Corrections to plan.—The foremast is tripod. Fore topgallant mast is fitted.
A.A. Armament is fitted between second funnel and mainmast. Searchlight platform added round after funnel.

LIGHT CRUISER.

Navarra (*ex*-Republica, *ex*-Reina Victoria Eugenia).



(102.R.)

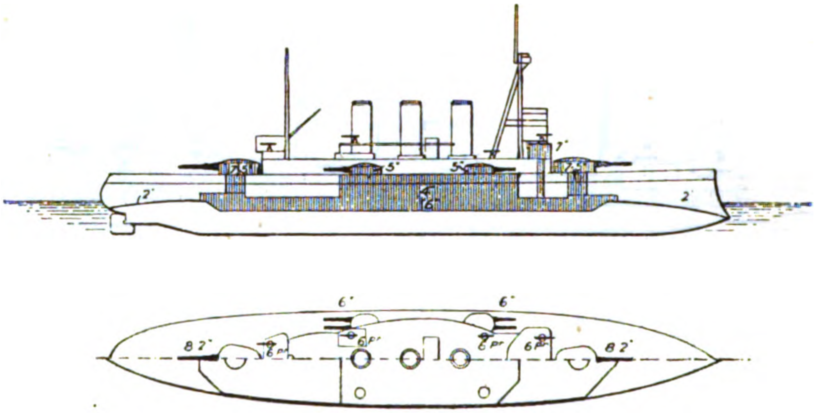
Length (extreme), 462 ft. ; 4,857 tons ; Speed, 25¼ knots ; Completed, 1923.
Armament, 6—6-in. ; 4—3·5-in. A.A. ; 4 M. ; 1 L. ; 4—21-in. torpedo tubes.

Correction to plan.—Foremost funnel and masts removed. Tower built in place of foremast and superstructure built in place of mainmast and fitted with pole masts. A.A. Armament fitted in way of funnels. Upper deck extends further aft.

SWEDEN.

BATTLESHIP.

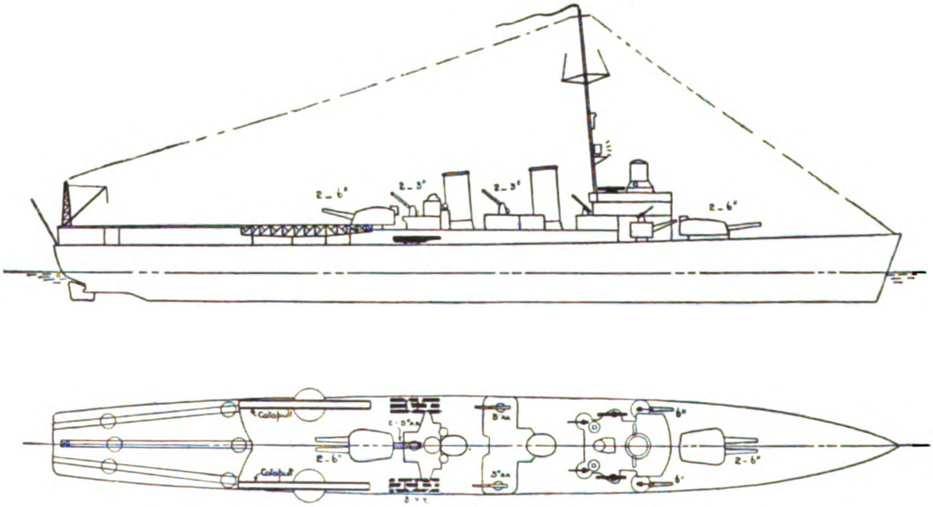
Oscar II.



Length, 313·6 ft. ; 4,250 tons ; Speed, 18 knots ; Completed, 1907.
Armament, 2—8·3-in. ; 8—5·9-in. ; 8—6-pr. ; 1—1-pr. ; 2 submerged 18-in. torpedo tubes.
Searchlights fitted on foremast and mainmast.

AIRCRAFT CRUISER.

Gotland.

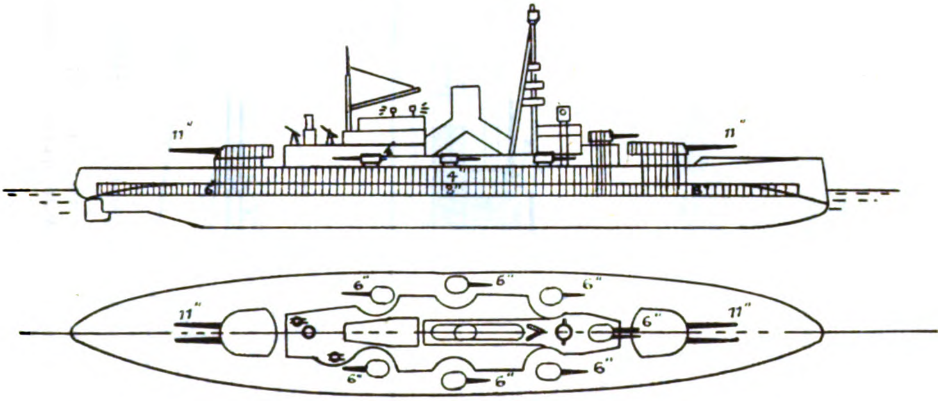


Length, 442 ft. ; 4,700 tons ; Speed, 27 knots ; Completed, 1934.
Armament, 6—6-in. ; 4—3-in. A.A. ; 4 M. ; 6—21-in. torpedo tubes ; 1 catapult ; 8 seaplanes ; 100 mines.
Correction to plan.—1 catapult is fitted on middle line.

SWEDEN.

COAST DEFENCE SHIPS.

Gustav V. **Sverige.**
(As reconstructed 1924-29.)



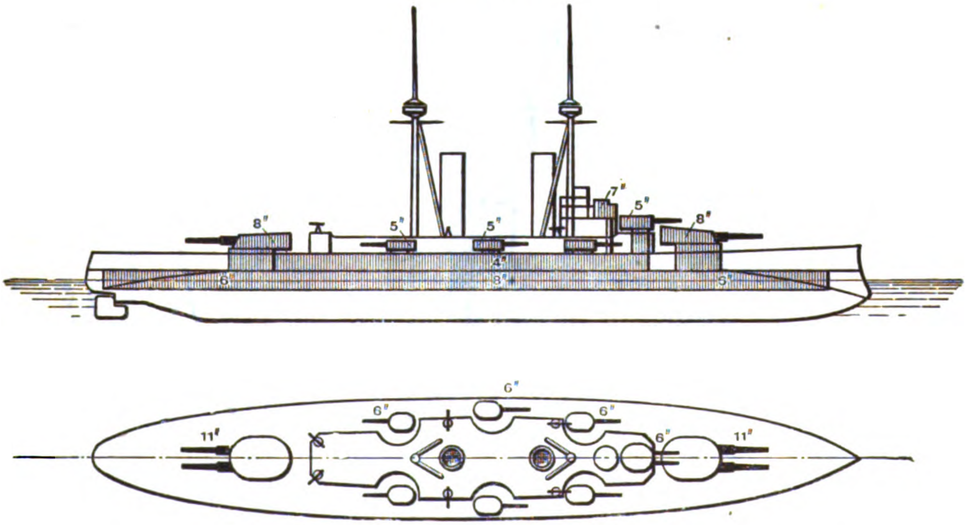
Length, 396·7 ft. ; Sverige, 6,899 tons ; Gustav V, 7,100 tons ; Speed, 23 knots ; Completed 1917-21.
Armament, 4—11-in. ; 8—5·9-in. ; 4—3-in. ; 2—6-pr. ; 6 M.

Correction to plan.—Fore topmast added. Bridgework extended. Mainmast removed. In Sverige the mainmast. is shortened ; two funnels are fitted, the after one being vertical and the forward one bent.

SWEDEN.

COAST DEFENCE SHIP.

Drottning Victoria.



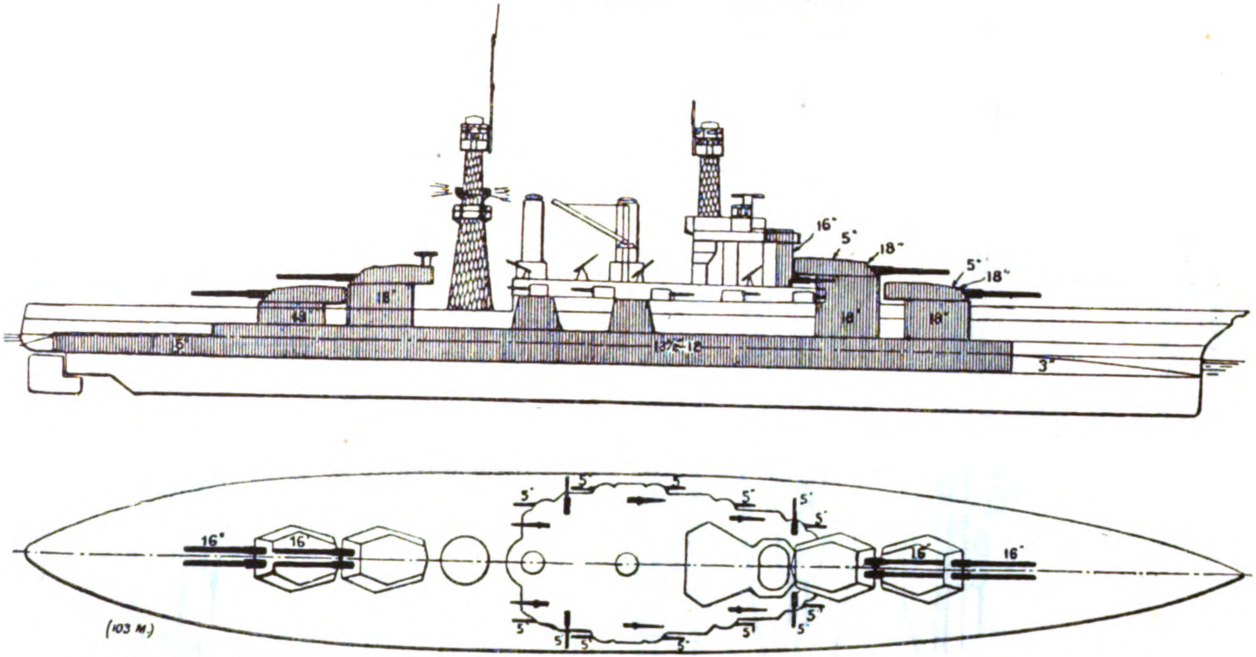
Length, 396·7 ft. ; 7,160 tons ; Speed, 23 knots ; Completed, 1921.
Armament, 4—11-in. ; 8—5·9-in. ; 4—3-in. ; 2—6-pr. ; 9 M.

Mainmast removed and bridgework modified. Searchlight platform and A.A. guns fitted abaft after funnel.

UNITED STATES.

BATTLESHIPS.

Colorado. **Maryland.** **West Virginia.**



Length (extreme), 624 ft.; Length W.L., 600 ft.; Speed, 21 knots; 31,500–32,500 tons; Maryland, completed, 1921; Colorado and West Virginia, completed, 1923.

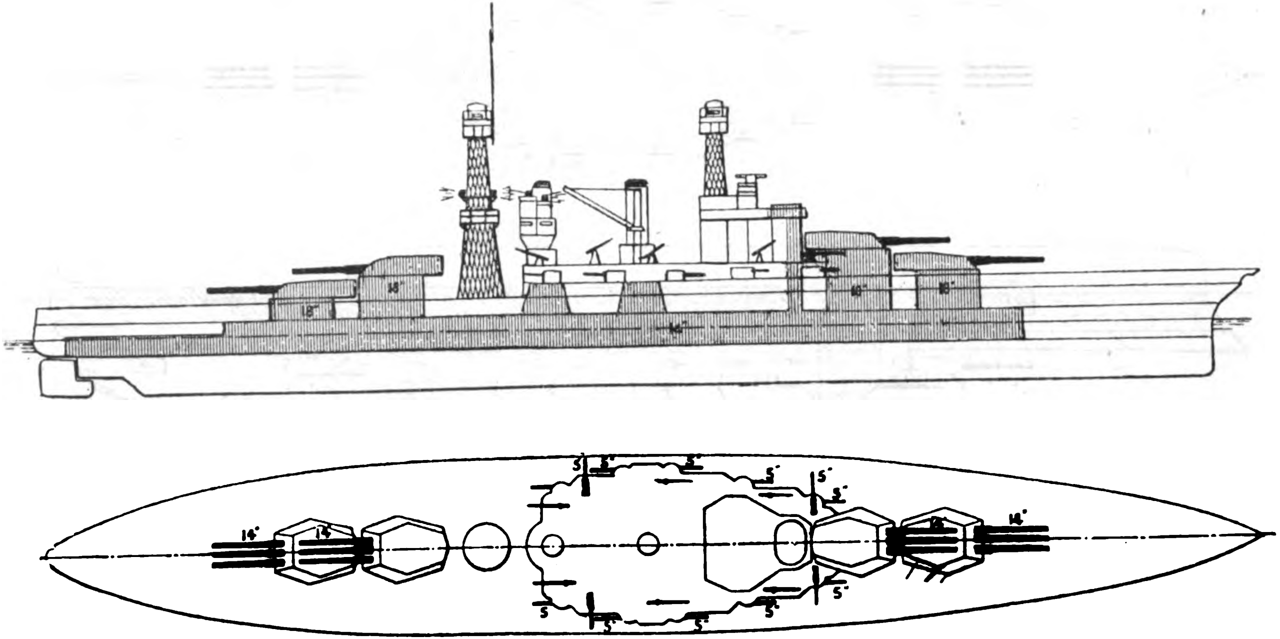
Armament, 8—16-in.; 12—5-in.; 8—5-in. A.A.; 2—6-pr.; 2—1-pr.; 8 M.; 2 submerged 21-in. torpedo tubes; 2 catapults; 3 aircraft.

Corrections to plan.—Catapults fitted on "X" turret and quarter deck. Crane fitted at stern. Main topgallant mast removed. Range finder fitted on B turret of Maryland.

UNITED STATES.

BATTLESHIPS.

California. **Tennessee.**

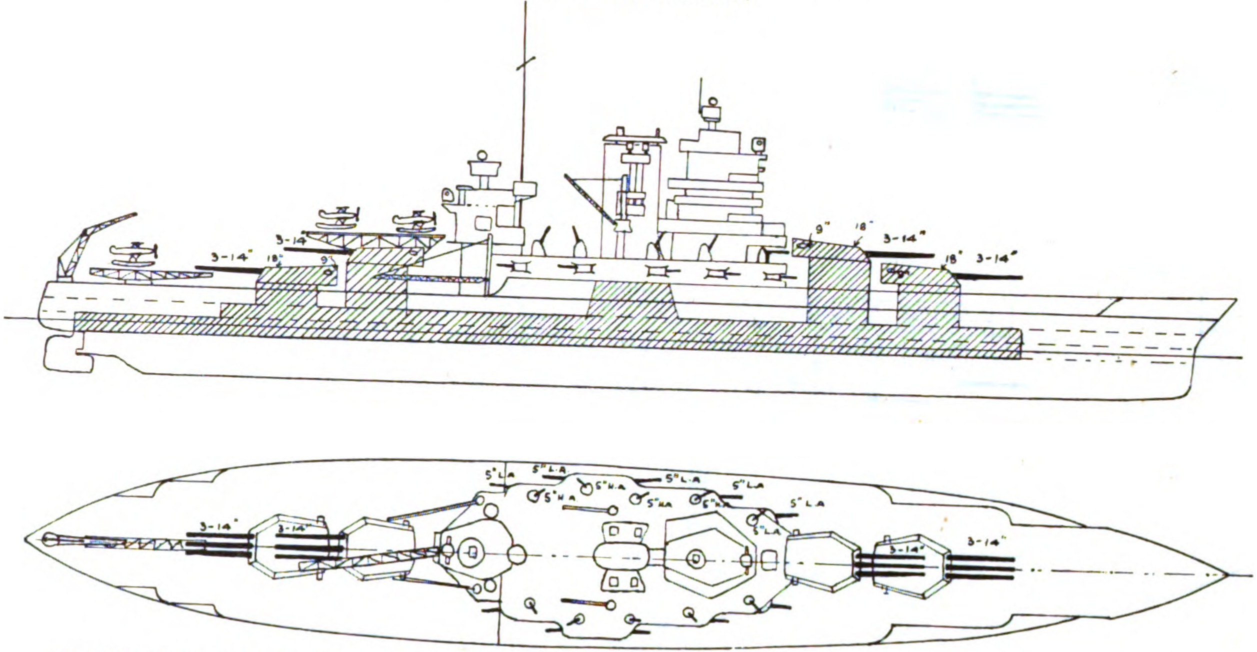


Length (extreme), 624 ft. ; Length W.L., 600 ft. ; Speed, 21 knots ; 32,600–32,300 tons ; Completed, 1920-21.
Armament, 12—14-in. ; 12—5-in. ; 8—5-in. A.A. ; 2—6-pr. ; 2—1-pr. ; 8 M. ; 2 submerged 21-in. torpedo tubes.
2 catapults (one right aft on quarter deck and one "X" turret) ; 3 seaplanes.
Main topmast shortened. Crane at stern.
Topmast and yards fitted to foremast.

UNITED STATES.

BATTLESHIPS.

Idaho **New Mexico.** **Mississippi.**
(After modernisation 1934.)



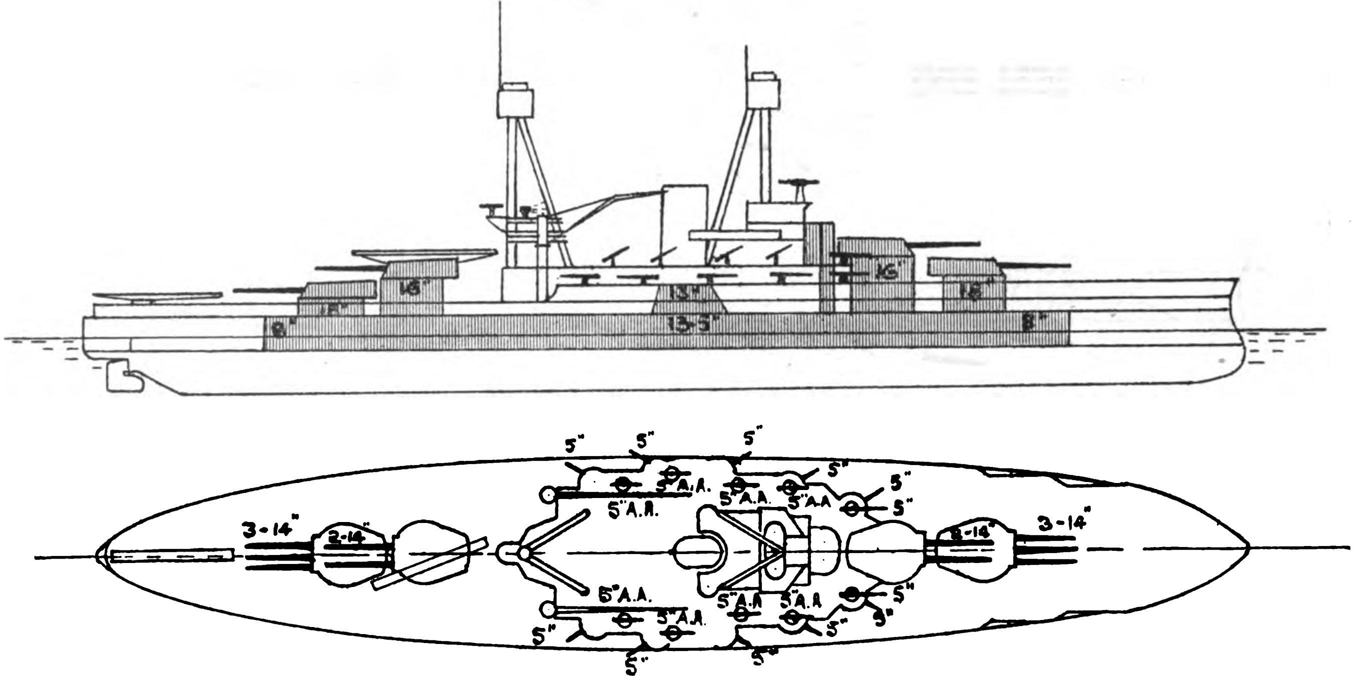
Length (extreme), 624 ft.; Length, W.L., 600 ft.; Speed, 22½ knots; 33.000 tons: Idaho and New Mexico, 33,400 tons; Completed, 1917–19; Modernised, 1931–4. Armament, 12—14-in.; 12—5-in.; 8—5-in. A.A.; 2—6-pr. (Idaho, 2—3-pr.); 2—1-pr.; 8 M.; 2 catapults; 3 seaplanes.

UNITED STATES

BATTLESHIPS.

Nevada. **Oklahoma.**

(As reconstructed 1929.)



Length (extreme), 583 ft.; Length W.L., 575 ft.; Speed, 20·5 knots; 29,000 tons.

Armament, 10—14-in.; 12—5-in.; 8—5-in. A.A.; 2—6-pr. (Oklahoma, 2—3-pr.); 2—1-pr.; 2 M.; 2 L.; 2 catapults; 3 aeroplanes.

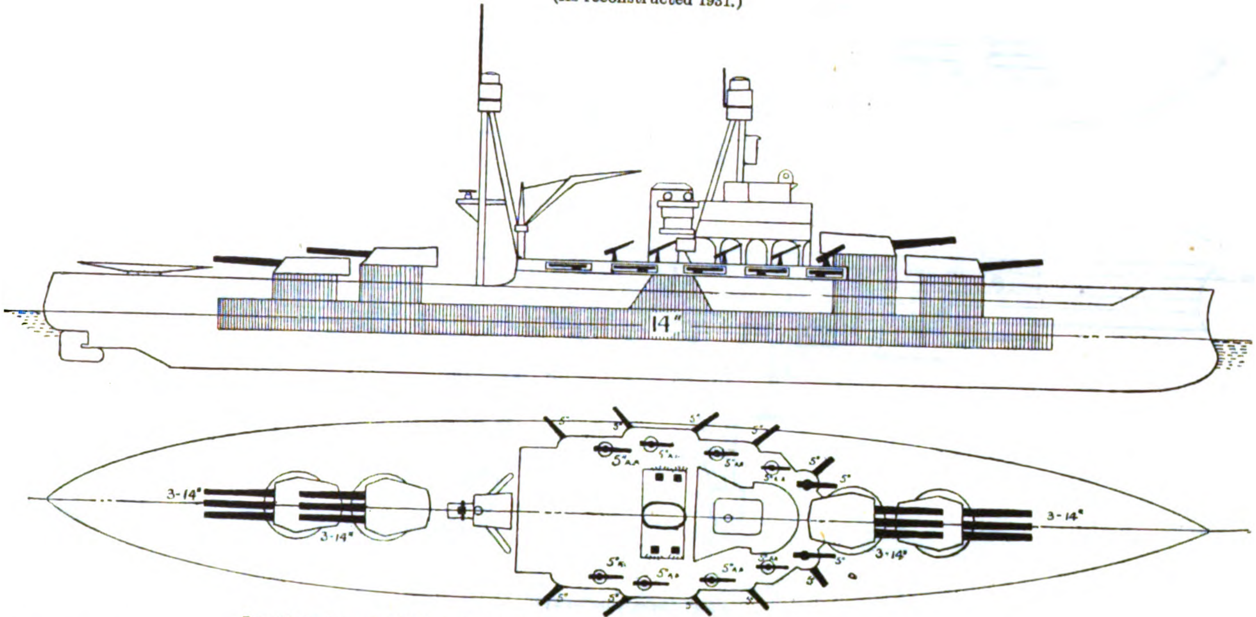
Correction to plan.—Bridgework extended and mastheads modified.

UNITED STATES

BATTLESHIP.

Pennsylvania.

(As reconstructed 1931.)



Length (extreme), 608 ft.; Length B.P., 596 ft.; Speed, 21 knots; 33,100 tons; Completed, 1916.
Armament, 12—14-in.; 12—5-in.; 8—5-in. A.A.; 2—3-pr.; 8 M.; 2 L.; 2 catapults; 3 aircraft.

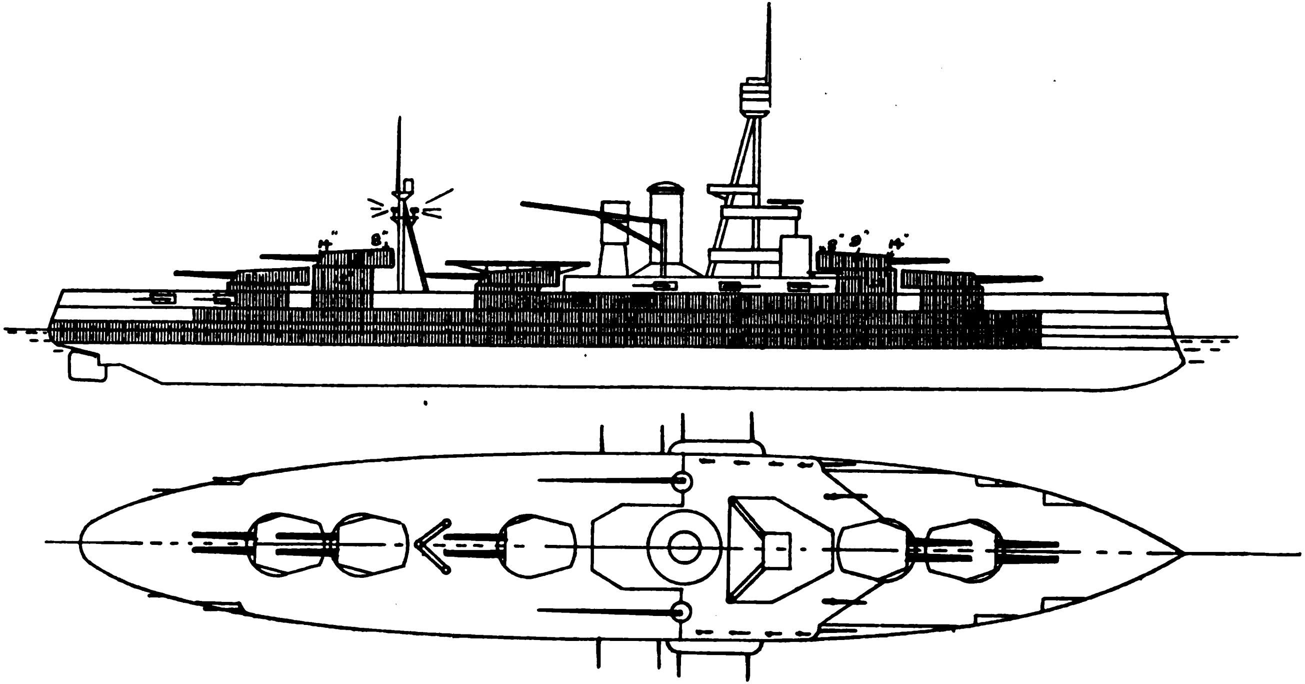
Corrections to plan.—Catapults fitted on "X" turret and quarter deck. Crane fitted at stern. **Main topmast is on fore side of mast structure.**

UNITED STATES.

BATTLESHIPS.

New York. **Texas.**

(As reconstructed 1927.)



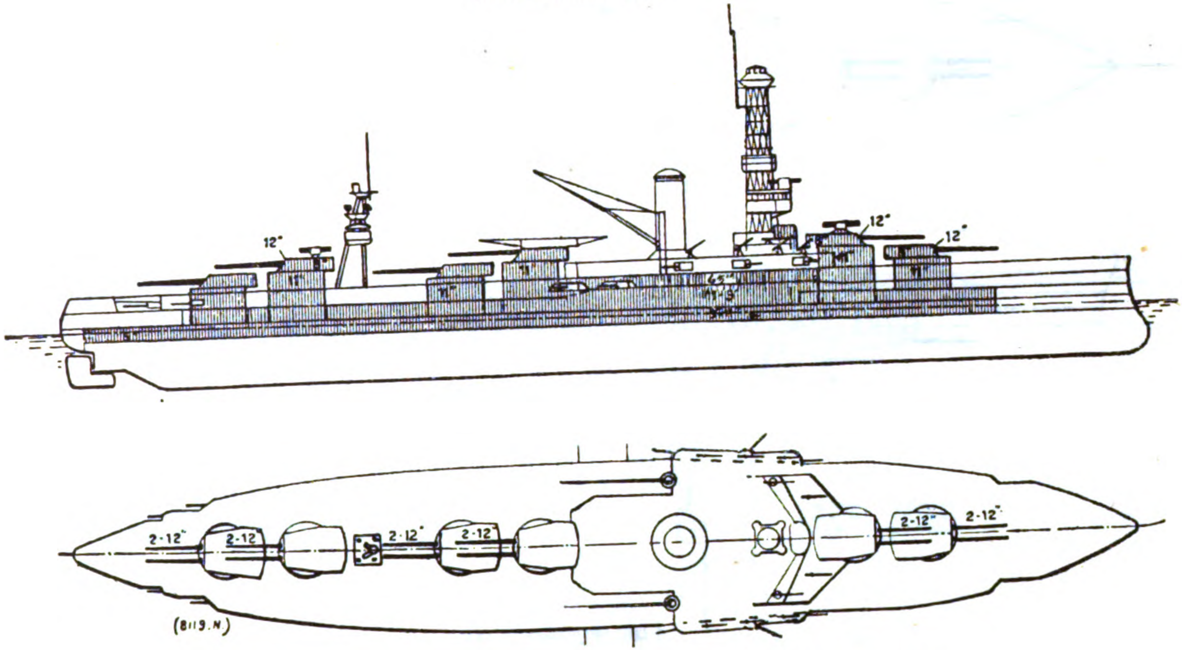
Length (extreme), 573 ft.; Length W.L., 566 ft.; Speed, 21 knots; 27,000 tons; Completed, 1914.
Armament, 10—14-in.; 16—5-in.; 8—3-in. A.A.: 2—3-pr.; 8 M.; 1 catapult: 3 aircraft.
Corrections to plan.—Fore topmast removed, mast heads modified. Main mast head fitted with machine guns.
Range finders fitted on "B" and "X" turrets.

UNITED STATES.

BATTLESHIP.

Arkansas.

(As reconstructed 1927.)



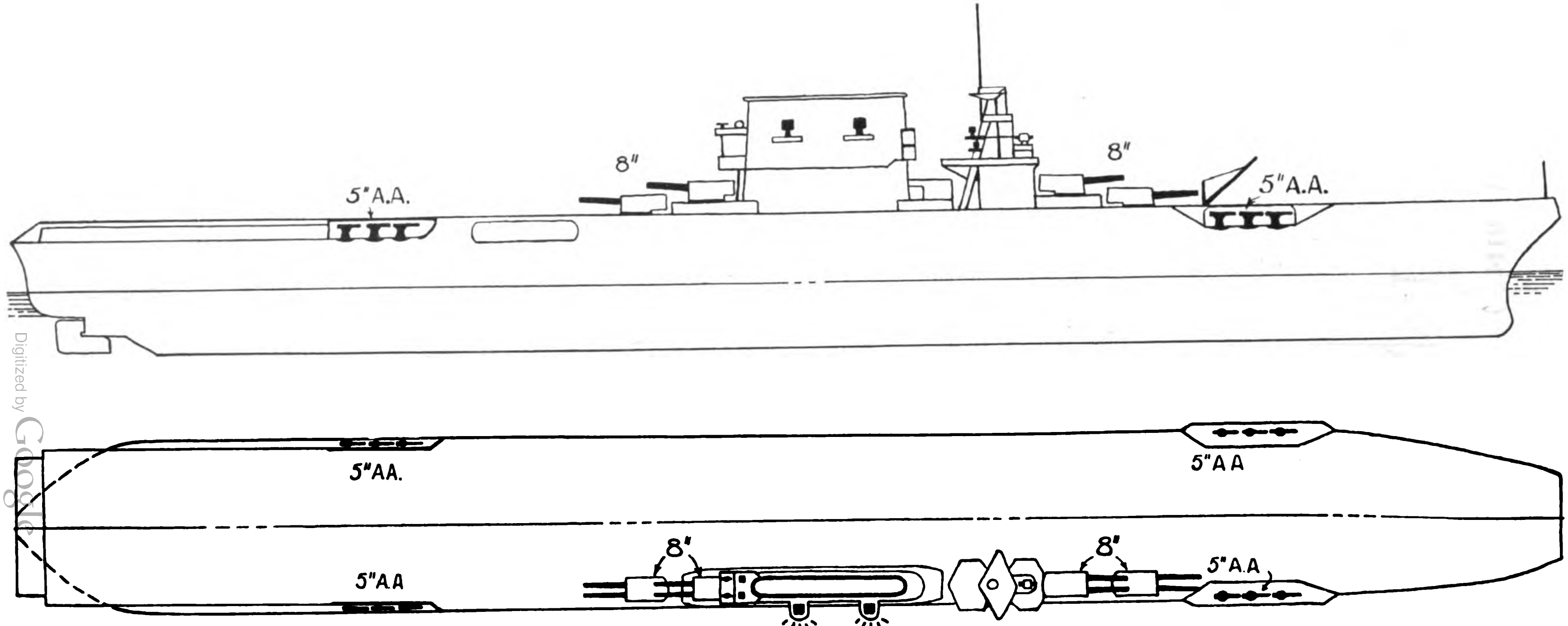
Length (extreme), 562 ft.; Length, W.L., 555 ft.; Speed, 20·5 knots; 26,100 tons; Completed, 1912.
Armament, 12—12-in.; 16—5-in.; 8—3-in. A.A.; 2—3-pr.; 8 M.; 1 catapult; 3 aircraft.

Wyoming, a sister ship, has been demilitarised and converted to a training ship.

UNITED STATES.

AIRCRAFT CARRIER.

Saratoga.

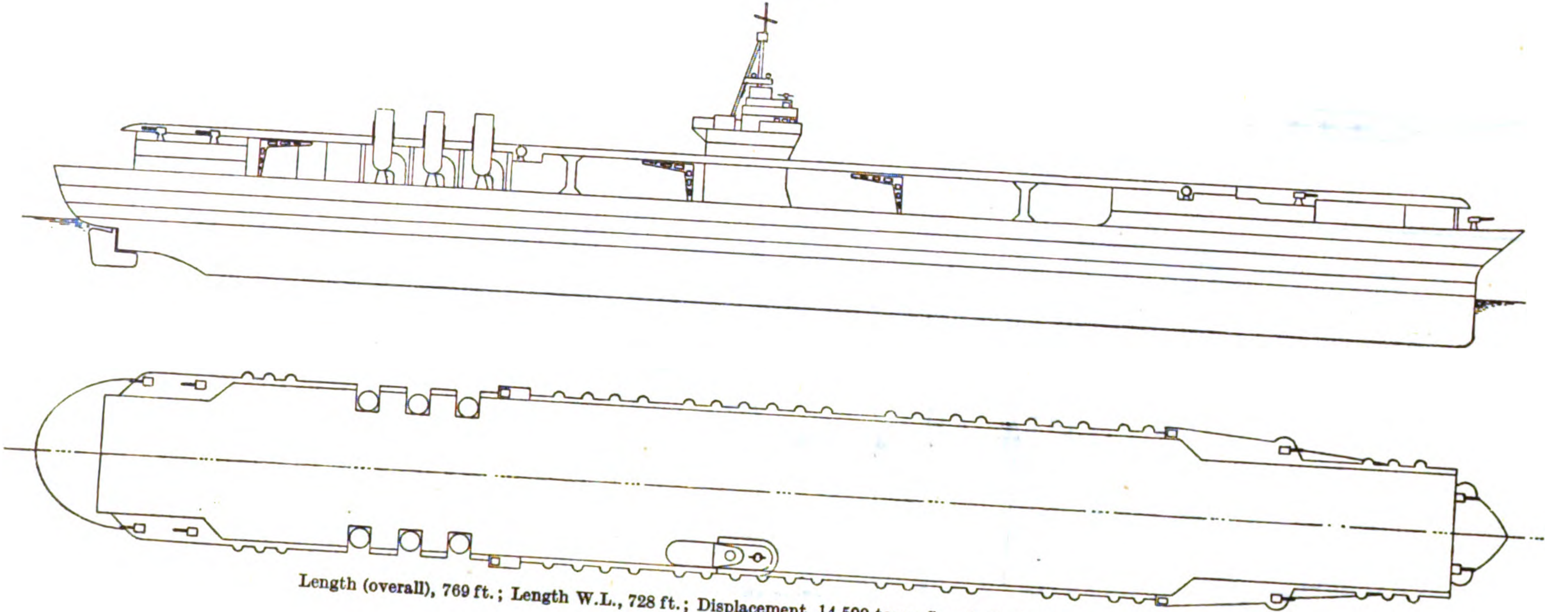


Length (extreme), 888 ft. ; 33,000 tons ; Speed, 33·9 knots ; Completed, 1927.
Armament, 8—8-in. ; 12—5-in. A.A. ; 2—6-pr. ; Operates about 80 aircraft 1 catapult.

UNITED STATES.

AIRCRAFT CARRIER.

Ranger.



Length (overall), 769 ft.; Length W.L., 728 ft.; Displacement, 14,500 tons; Speed, 29¼ knots. Completed, 1934.

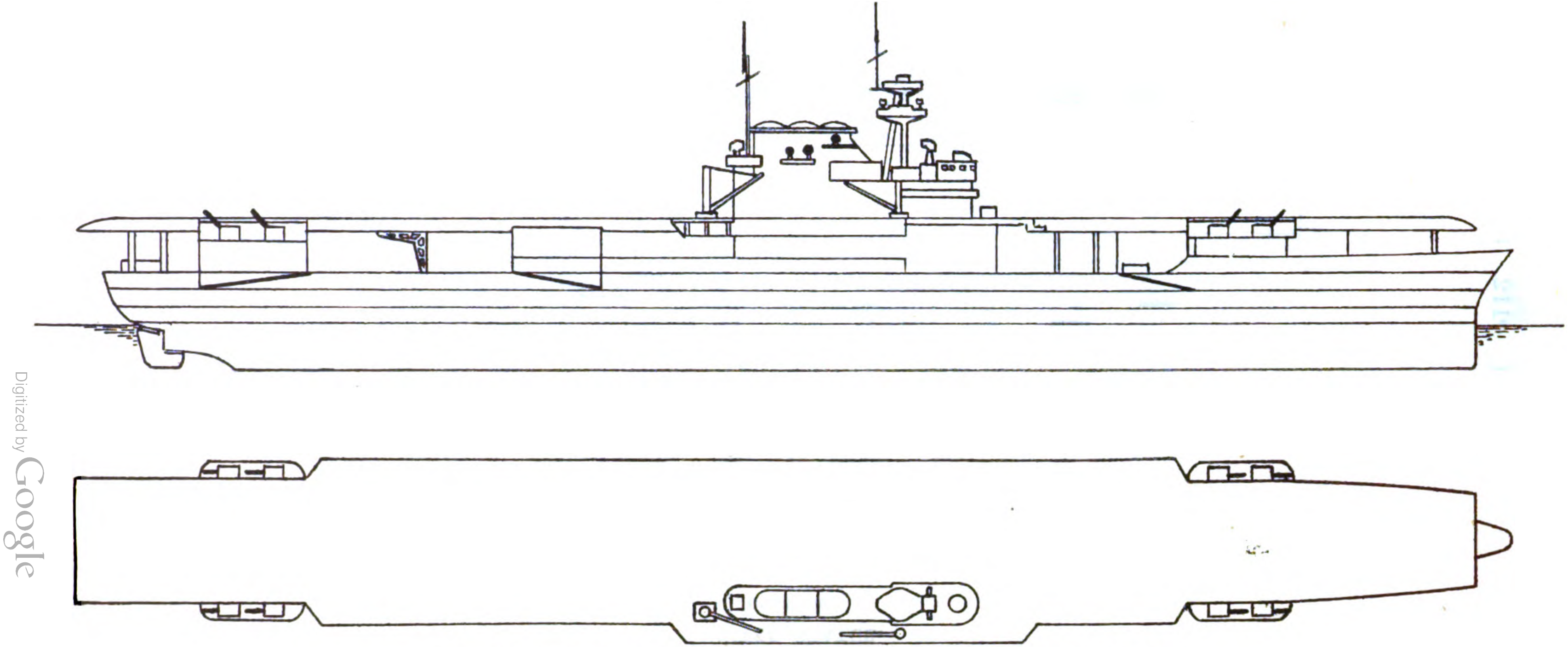
Armament, 8—5-in. A.A.; 50 M.G.; 76 aircraft.

NOTE.—The funnels can be swung outboard. Signal masts fitted at ends of flight deck.

UNITED STATES.

AIRCRAFT CARRIER.

Enterprise.

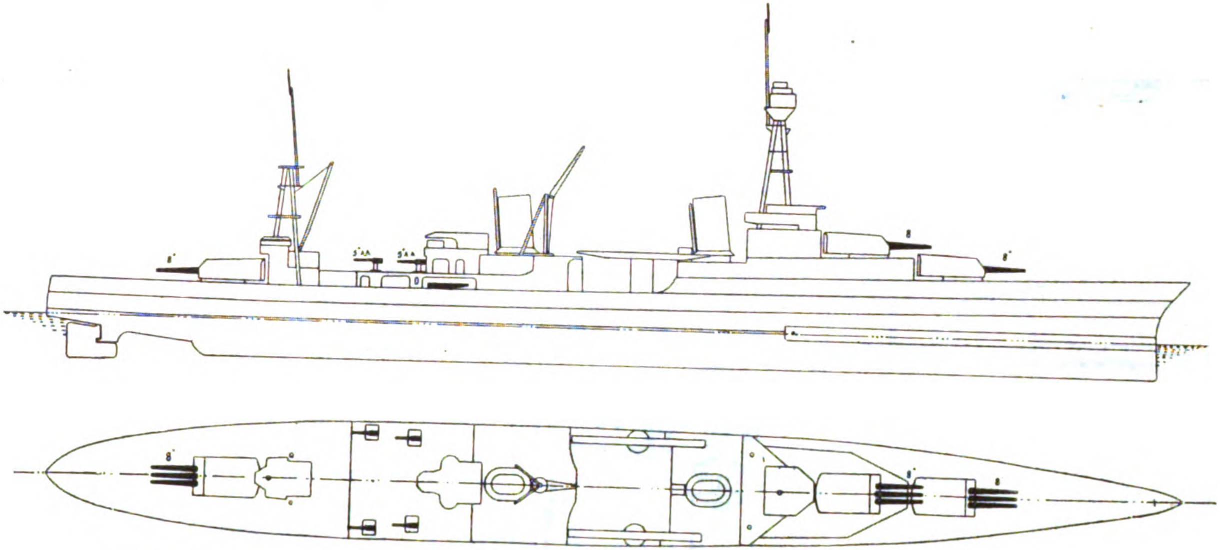


Length (on W.L.), 761 ft.; 19,900 tons; Speed, 24 knots; Enterprise and Yorktown completed 1938.
Armament, 8—5-in. A.A.: 16 1·1 in. M.A.A.; 76 aircraft; 1 catapult.

UNITED STATES:

CRUISERS.

Northampton. **Chester.** **Louisville.** (" *Chester* " *Class.*) **Augusta.** (" *Augusta* " *Class.*)



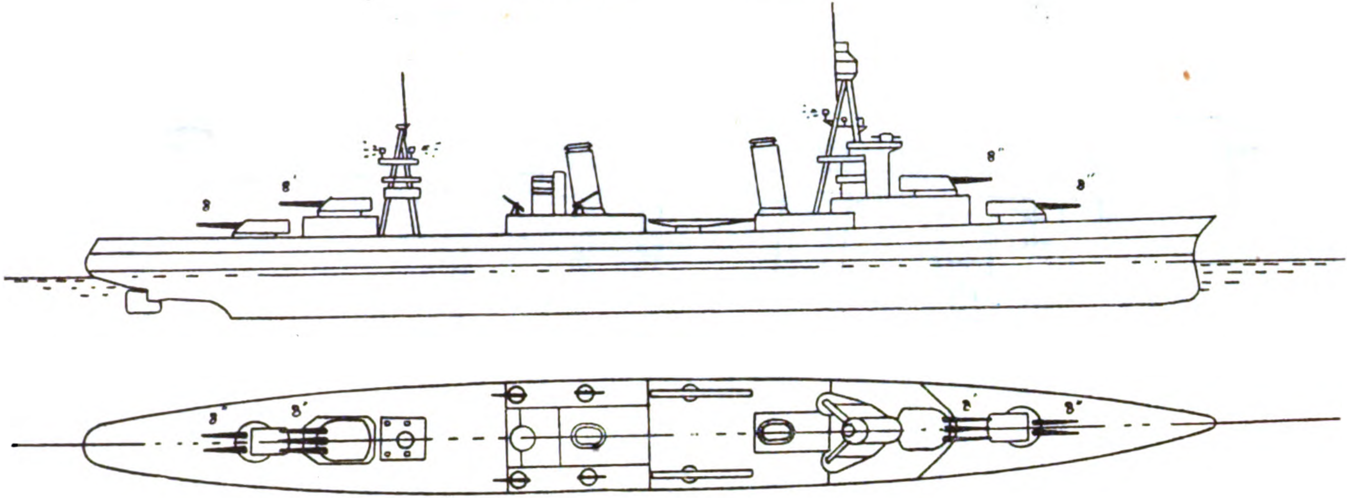
" Chester " and " Augusta " Classes : Length (extreme), 600¼ ft. ; 9,050–9,300 tons ; Speed, 32·5 knots ; Completed, 1930–31. Armament, 9—8-in. ; 4—5-in. A.A. ; 2—3-pr. ; 8 M. ; 2 triple 21-in. torpedo tubes ; 2 catapults ; 4–6 seaplanes.
Correction to plan.—Fore topmast shortened.

UNITED STATES.

CRUISERS.

"Pensacola" Class.

Salt Lake City. **Pensacola.**



Length (extreme), 585½ ft. ; 9,100 tons ; Speed, 32·7 knots ; Completed, 1930.
Armament, 10—8-in. ; 4—5-in. A.A. ; 2—3-pr. ; 8 M. ; 2 triple 21-in. torpedo tubes ;
2 catapults ; 4 seaplanes.

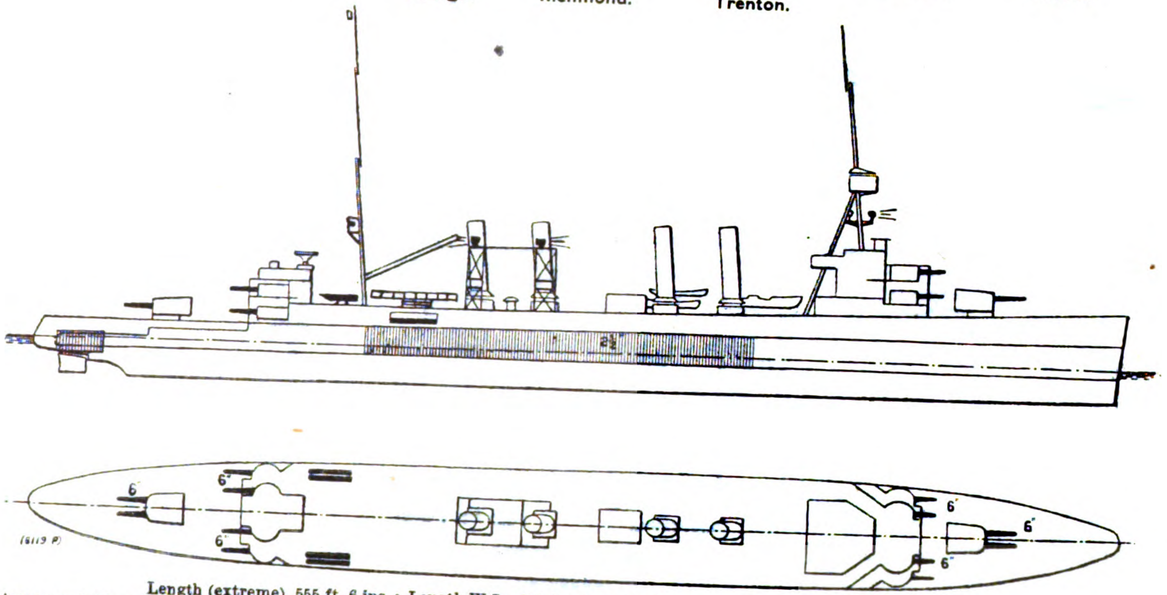
Corrections to plan.—Crane fitted on fore side of after funnel and derricks fitted on after side.

UNITED STATES

SCOUT CRUISERS.

"Omaha" Class.

Cincinn . Concord. Detroit. Raleigh. Marblehead. Richmond. Memphis. Trenton. Milwaukee. Omaha.



Length (extreme), 555 ft. 6 ins.; Length W.L., 550 ft.; Speed, **33·7 knots; 7,050 tons**; Completed in 1923-25.

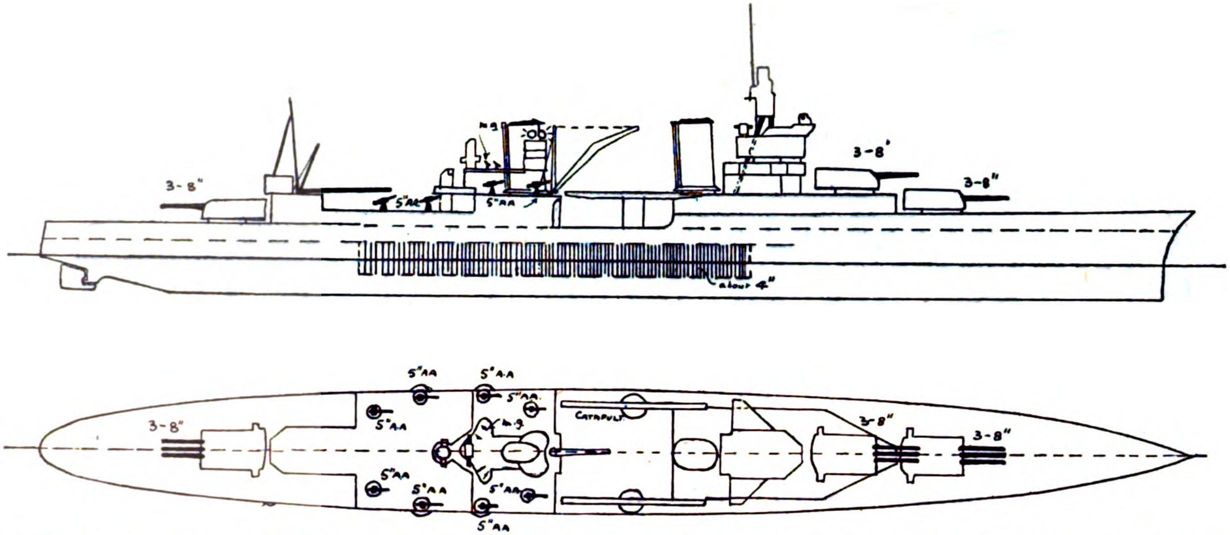
Armament, 12—6-in. (Marblehead, 11—6-in.; Cincinnati, Detroit, Raleigh and Richmond, 10—6-in.); 4—3-in. A.A.; 2—3-pr.; 2 triple above-water 21-in. torpedo tubes; 2 catapults; 2 aeroplanes; 30 mines.

Corrections to plan.—The pair of single 6-in. guns at upper deck level aft are removed in Marblehead, Cincinnati, Detroit, Raleigh and Richmond. In Marblehead there is a single gun on top of the after battery. **Topgallant masts removed and topmasts shortened. Foremast head in Marblehead fitted with machine guns.**

UNITED STATES.

CRUISERS.

Indianapolis. Portland.



Length (extreme), 610 ft. 3 ins.; Indianapolis, 584 ft. on W.L.; Portland, 582 ft. on W.L.; Indianapolis, 9,950 tons; Portland, 9,800 tons; Speed, 32·7 knots. Completed, 1932–1933. Armament, 9—8-in., 8—5-in. A.A.; 10 machine guns; 2 catapults; 4–6 aircraft; 2—3-pdr.; 6—21 in. torpedo tubes.

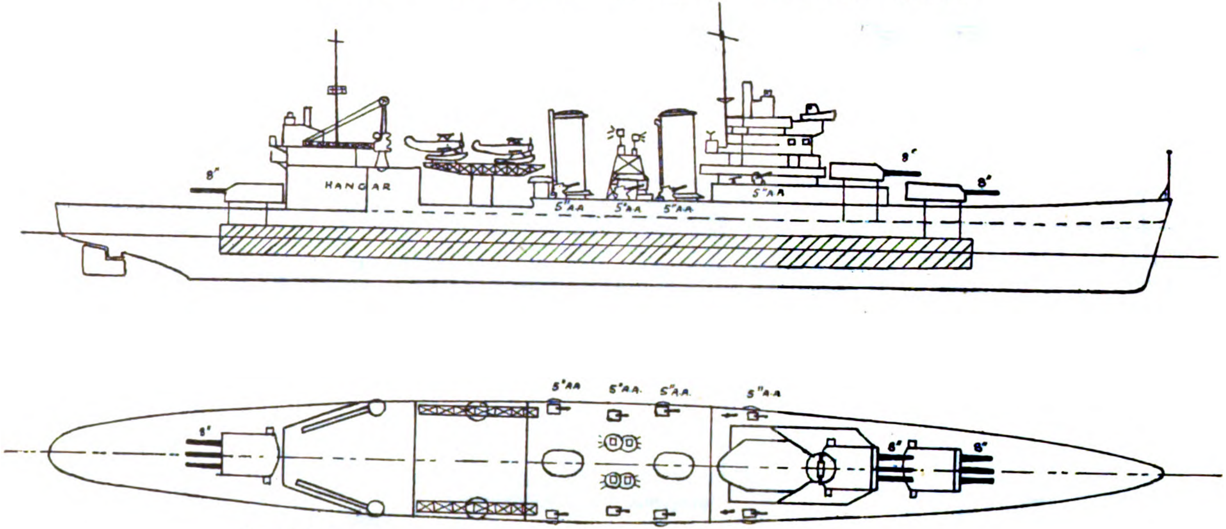
Corrections to plan.—Fore topmast is raked. Foremost funnel lengthened.

UNITED STATES.

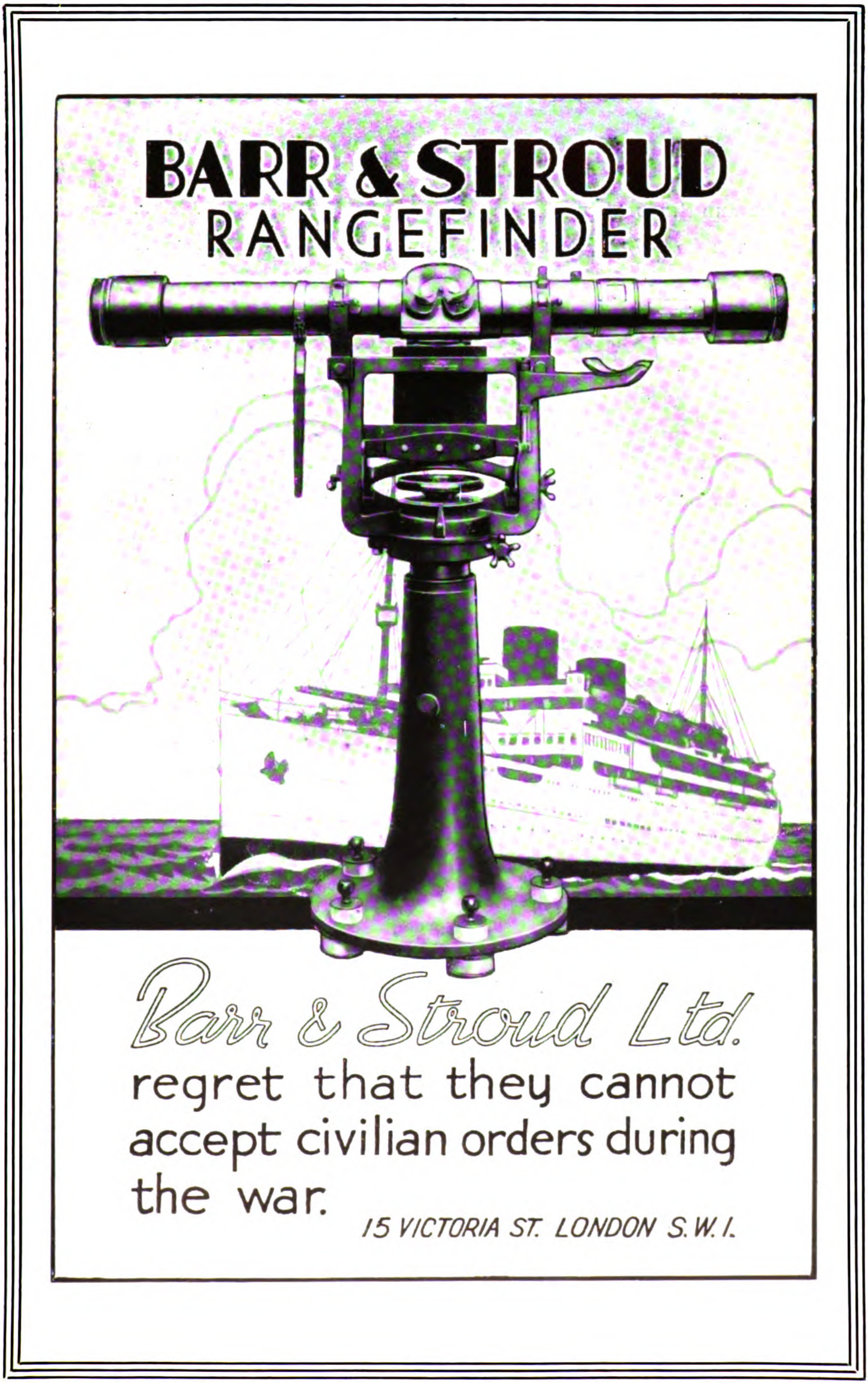
CRUISERS.

"Astoria" Class.

New Orleans. **San Francisco.** **Minneapolis.** **Tuscaloosa.** **Wichita.**



Length (extreme), 588 ft.; on W.L., 574 ft.; 9,950 tons; Speed, 32·7 knots; Completed, 1934–36.
Armament, 9—8-in., 8—5-in., 2—3-pr., 10 smaller; 2 catapults; 4 aircraft.
Forward funnel fitted with clinker screen.



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a.a.cr. anti-aircraft cruiser ; *a.cr.* armoured cruiser ; *a.g.* armoured gunboat ; *air.c.* aircraft carrier ; *air.cr.* aircraft cruiser ; *air.t.* aircraft tender ; *a.s.* armoured ship ; *a.t.* aviation transport ; *b.* battleship ; *b.cr.* battle cruiser ; *c.d.* coast defence ship ; *cr.* cruiser ; *cr.m.l.* cruiser minelayer ; *d.* destroyer ; *f.cl.d.* first-class destroyer ; *f.cl.t.b.* first-class torpedo-boat ; *f.l.* flotilla leader ; *l.cr.* light cruiser ; *m.l. & t.s.* minelaying and training ship ; *s.cl.d.* second-class destroyer ; *s.cr.* scout cruiser ; *sea-p.c.* seaplane carrier ; *tr.cr.* training cruiser.

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